

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXII.

SATURDAY, JUNE 3, 1893.

No. 22.

ORIGINAL ADDRESS.

SOME REMARKS ON ARSENICAL POISONING, WITH SPECIAL REFERENCE TO ITS DOMESTIC SOURCES.¹

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ARSENICAL poisoning may be either acute or chronic. Speaking broadly, the manifestations of the acute form vary according to the mode in which the poison influences or enters the system; whether its action is mainly local on the skin or exposed mucous membranes; whether it is taken into the stomach, or reaches in a gaseous form the blood and tissues by inhalation through the lungs. We thus have inflammation of the skin or superficial mucous membranes, intense gastro-intestinal irritation, or symptoms of a very grave but more general character. There is less close relation between the manner of exposure and the character of the leading symptoms in the chronic forms, which include most cases of so-called domestic poisoning; but in these, as we shall see later, all avenues of entrance into the system may be open at once. It is interesting to note that patients who survive the early stages of acute poisoning may later, through absorption into the blood and deposition in the tissues, present symptoms identical with those which may also follow the slow and more or less continuous absorption of far smaller, perhaps of very small doses. For instance, in a husband and wife who nearly died from arsenic administered once or at most twice in their food by a daughter, who hoped thus to secure an inheritance and render herself more acceptable to a lagging lover, I have seen the development of extreme general neuritis and of pigmentation of the skin resembling, except in its universality, that of Addison's disease. In the husband ninety-three days elapsed before Prof. E. S. Wood failed to detect arsenic in the urine.² Such cases form part of the evidence that the metal is stored up in the system and forms albuminoid compounds, from which it is only gradually set free, and they also illustrate the double toxic action of arsenic, its local irritant and its general systemic effects. It may be mentioned that arsenic seems to be stored up in the brain and spinal cord more largely even than in the liver.³

The leading statements which follow admit, I suppose, of no dispute.

¹ The Semi-annual Address before the Philadelphia Pathological Society, April 27, 1893.

² The husband is still, after a year's interval, a paralytic and in the poor-house, I am told.

³ Poncy and Livon: *Journal de Pharmacologie et Chemie*, October, 1879, p. 344. Scolosoboff: *Bulletin de la Société de Chemie de Paris*, xxiv, No. 3. Gautier: *Annales d'Hygiène*, January, 1876, p. 136.

A. 1. The continued administration of arsenic by the stomach is liable to lead to symptoms of poisoning. These symptoms may be direct—gastro-intestinal irritation; or indirect—anemia and debility, dermatitis of different forms, skin-pigmentation, redness of the conjunctiva, puffiness under the eyes, headache, irritation of the upper air-passages, irritation of the kidneys as shown by small traces of albumin, casts, and blood in the urine, and peripheral neuritis. This list could be made longer, but comprises the more frequent manifestations. In some respects the neuritis is one of the most interesting of these. With regard to it I recall reading, but cannot now remember where, the statement of Seguin, that in his very large experience he has never seen neuritis follow the medicinal use of arsenic. In my more limited experience I have seen at least two such cases. One was that of a young woman successfully treated for chorea with large doses of Fowler's solution, which were well borne as far as the digestive organs were concerned, but she developed a marked and widespread paralysis of both motion and sensation from which recovery was slow. The other was also in a young woman, treated by me last autumn for leukemia with Fowler's solution, gradually increased to fourteen drops thrice daily, and maintained for some weeks at that level. She developed a mild but unquestionable neuritis, and also the characteristic brown discoloration of the skin. One post-choreic case of arsenical neuritis has been observed at the Boston Children's Hospital.

2. Medical literature contains reports of a fair number of cases of poisoning by arseniuretted hydrogen, although Professor Chandler¹ says: "I never knew a case except those mentioned in the books many years ago—Galen, for instance, who put his nose to it and is said to have been killed by it—and I have never heard of one." These cases are chiefly acute and mostly rapidly fatal. The possibility that chronic non-fatal cases of poisoning originating in this way may be pretty common will be touched upon later.

3. Arsenical stockings, veils, and other articles which are liable to be closely applied to the human skin, have often been held responsible for toxic symptoms—general from absorption of the drug, as well as local from its irritant effect. A well-known Boston physician had two attacks of sore fingers. He consulted Dr. J. C. White, who asked him whether he had anything to do with arsenic. He could think of nothing except some playing cards which he had used. These were found to be loaded with arsenic, were discarded, and he has not had any similar trouble since. Reports of general poisoning from the use of arsenical pastes, lotions, and ointments are also to be found. Dr. Stillé cites a number in his work on *Therapeutics and Materia Medica*.

B. The great difference between different persons in

¹ Appendix to No. 417, House of Representatives, Massachusetts, 1886.

susceptibility to arsenical poisoning must be admitted; but the influence of idiosyncrasy does not seem to be greater here than in the case of lead, alcohol, tobacco, and many other toxic agents. It is highly probable that habituation also plays a part. Here we naturally think of the Styrian peasants so often brought up in this connection. It seems to be a fact that some of them gradually acquire the power of taking, without obvious inconvenience, doses which would prove fatal to virgin soil—six grains, for instance, it is said. But no modern physician, so far as I know, has in very recent times carefully investigated this peasantry to ascertain how many try to become arsenic-eaters and fail in their attempt; how many develop neuritis or other indisputable toxic symptoms. I cannot regard the statement of Marik¹ as conclusive. He bases his opinion that arsenical paralysis is rare in Styria upon conversations with physicians practising in that province, and on a paper of B. Knapp,² written in 1885, when we knew much less about neuritis, especially in its milder forms, than we do now. A degree of neuritis might well pass unnoticed in a peasant, which an artisan, for instance, would find forced upon his attention.

We have all seen patients, to whom we wished to give arsenic for anemia, chorea, or other cause, show intolerance even of the smallest doses given with every precaution. I remember a leukemic boy in my hospital ward, who bled at the gums and grew worse in every way whenever an arsenical course was instituted, even though only one drop of Fowler's solution thrice daily was given.

C. Arsenic is widespread in civilized countries. It enters as component or impurity into many articles of domestic use. I will not weary you with an attempt to form a complete list; but among these articles may be mentioned wall-papers; cretonnes and other prints; red-striped bed-ticking; Turkey-red cotton; child's paints; the "plated" or "glazed" papers used for kindergartens, for covering paper boxes or wrapping confectionery; some woollen dress goods, hangings, and curtains; black and other stockings; some distemper paints—indeed, anything in which an arsenical anilin pigment is used as a dye. These dyes may contain from 2 per cent. to 3 per cent. of arsenic by weight. Formerly arsenic acid was largely used as an oxidizing agent in the manufacture of fuchsin or magenta, but chromic acid answers equally well. Sodium arsenite is also used as a mordant to fix colors which may be non-arsenical. Silks are rarely arsenical.

D. From these articles or from some other sources in our surroundings, arsenic is absorbed into the system of many persons, as is shown by its detection in the urine of at least 30 per cent. of persons taken at random by J. J. Putnam.³

We now come to the question as to whether arsenical poisoning arises from the afore-named domestic sources, or, rather, whether it so arises frequently enough to demand the serious consideration of physicians, the guardians of the health of the public, as well as that of their individual patients. The burden of proof certainly

rests on those who maintain the affirmative. Let us, therefore, examine the evidence for and against, beginning, as is I think usual in judicial inquiries, with the case for the plaintiff.

Readily-accessible medical literature contains the reports of a large number of cases, many of which came under the observation of highly-trained physicians presumably alive to the dangers of incomplete observation and hasty deduction, and these cases presented symptoms of varying intensity and detail, persisting in spite of what seemed judicious treatment. These symptoms were mainly subjective in some, but usually objective as well, ranging all the way from anemia and debility to extensive peripheral neuritis. For the symptoms, no obvious cause could be discovered in the patients' manner of life, habits, or surroundings. In not a few cases a marked improvement took place on change in locality, perhaps trifling in character, while the symptoms speedily returned on resumption of home-life, without clearer assignable cause than at their first appearance. It was then found that the wall-paper of a room in which the patient slept or passed much time, the Turkey-red lining of a bed-quilt under which he slept, the red-striped bed-ticking covering his pillows or mattress, the chintz coverings of a sofa or of chairs, contained considerable quantities of arsenic. Then arsenic was also found in the urine of the patient, although it had not been given him as a drug or entered his system in Vichy or other arsenical mineral water. The kidneys were in an irritated condition. The arsenically-contaminated material was then removed and replaced by one free from the metal. This was followed by the more or less prompt abatement and disappearance of all symptoms and by restoration to health. In comparatively few of these cases is the history completed by finding the urine non-arsenical after the lapse of some months. If the patient is well, he often passes out of the observation of the physician, who may not care to subject the patient or himself to the expense of an examination which, from the point of view of the layman, seems unnecessary.

All of the reported cases are not so complete as those just sketched. In many the evidence consists in a certain grouping of symptoms for which it is difficult to account, arsenical surroundings and urine, removal of arsenic from the surroundings, and recovery. I speak of a certain grouping of symptoms. There is no one symptom which is invariably present in cases of supposed arsenical poisoning. We cannot look for a pathognomonic sign here more than elsewhere; but anemia, debility, loss of appetite, frontal headache, perhaps nausea and vomiting, redness of the eyelids, and catarrh of the air-passages or of the intestinal tract, may be so combined as to be highly suggestive that arsenic will be found in the surroundings and also in the system.

If cases like these were isolated, occurred only in one locality, or only in the practice of one physician, one would not attach the same importance to them which one is led to attach when they are seen to occur in Great Britain and the Continental countries, in Maine and Michigan and other States as well as in Massachusetts. In reasoning from cause to effect or from effect to cause, we must often ask ourselves whether the association of result with supposed cause is merely coincidental

¹ "Ueber Arseniklähmungen," *Wien. klin. Wochenschr.*, 1891, Nos. 31-40.

² *Erg. Hefte zum Centralblatt. f. allg. Gesundheitspflege*, 1885.

³ *Boston Med. and Surg. Journ.*, 1890, cxxii, p. 421.

or otherwise. I think I am alive to the ease with which, especially when public agitation is going on, members of our profession, as well as the laity, may jump at conclusions and connect things which do not belong together. The removal of a supposed injurious influence may well act as a species of mind-cure, and the reference of more or less vague symptoms of ill-health to a definite and removable cause may satisfy the patient and the physician alike. Some of the reported cases of domestic arsenical poisoning are certainly inconclusive, and I have no doubt that many persons in Boston and vicinity, particularly, have erroneously believed themselves or have been believed to be victims of this kind of poisoning. Some of the cases which have been reported and observed suggest that arsenic may be but one of two or more causes tending to produce ill-health, and that a person already debilitated from some other cause or causes may then be more susceptible to the supposed injurious influence of this poison. Prof. E. S. Wood¹ refers to the case of a young athlete whose convalescence from influenza seemed to his physician, a thoroughly competent man, unreasonably delayed. Arsenic was found in his urine, although the papers, carpets, etc., were free. Eighteen stuffed birds were finally removed from his room and recovery was then rapid.

Allowing full weight to inconclusive cases, and also to all other possible sources of error, it seems to me that there remains enough to make us hesitate, to say the least, before we attribute the whole thing to mere coincidence. The temptation is great to cite cases, but I shall confine myself to a series reported by C. P. Putnam,² and a few of my own which have not been published. When Dr. Putnam went on duty at the Massachusetts Infant Asylum in the spring of 1890, he found the babies looking very pale, without any apparent reason. He then noticed suppurations on the fingers and a slight discharge from the ears. Occasionally a nurse had sores on the fingers. One had an aural discharge, and other skin-eruptions were noticed. Arsenical poisoning was thought of as possible, but there was no wall-paper, no carpets, or other suspicious articles. The health of the inmates of the asylum grew worse. Bronchitis appeared, and two children died from inflammation and ulceration of the air-passages, involving the pleura.³ Some blue dresses recently furnished by the asylum to all the nurses fell under suspicion and were found to contain much arsenic. They were discarded and the health of the institution was reestablished. Much of the arsenic was found to be loose in the cloth. The dresses were therefore thoroughly washed in the winter of 1891 and resumed by the nurses. Very soon afterward both nurses and babies began to have sores on their fingers and other signs similar to those which had

appeared before. The dresses were again discarded. The symptoms again disappeared and have not recurred in the past two years. The evidence in my own cases is not as striking, but they serve as fair illustrations of many cases seen by many physicians.

1. W., a clerk in a large dry-goods house, entered my service in the Massachusetts Hospital in the fall of 1891, with poor general health and marked neuritis in all the extremities. It was with much difficulty that he could pick a pin up from the table. Neither alcohol, rheumatism, lead, nor gout could be considered as causative of the neuritis. The physician under whose care he had been, a gentleman well known to me, had given him no arsenic. The bedroom wall-paper, which had been applied for eight years, was highly arsenical, and arsenic was found in his urine. He soon began to improve, was discharged from the hospital, and after a time resumed his work, discarding the arsenical wall-paper. I saw him very recently again, and found his general condition still below par, with some neuritis still present, though not enough to seriously interfere with his work. An electric examination, which Dr. J. J. Putnam was kind enough to make, confirmed the diagnosis of neuritis. The urine still contains a considerable amount of arsenic, the source of which I have not as yet been able to trace.

2. G., a laister, entered my service January 30, 1893. Investigation showed that no arsenic had been given him before this. Besides pallor and loss of flesh, he had ataxic paralysis of all the extremities, which proved, after thorough study, to be due to peripheral neuritis, and for which the usual causes, as laid down in the books, could not be considered as responsible. I then had the urine examined by Prof. Wood for lead and arsenic. The former was absent, the latter present in large amount. I then secured some of the paper from the bedroom which the man had occupied for two years, and also samples of the leathers on which he worked. The paper was highly arsenical, as was also one of the samples of leather. After entrance to the hospital he grew steadily worse for some weeks, a continuance of the downward tendency present when he first came under observation, and was confined to bed; but he is now greatly improved and steadily gaining in all respects.⁴

3. Two vigorous boys, brothers, had been confined to the house in town by colds and chicken-pox shortly after their return from the seashore. From these diseases they had just recovered when they, and also another brother who had been previously well, began to have recurrent attacks of nausea and vomiting. I presently suspected that some kind of poison from without was at work, and had the plumbing, cooking utensils, refrigerators, etc., examined, without finding here any cause for the illness. The symptoms grew worse. The youngest boy became extremely weak. I then had the wall-paper examined for arsenic, which was found in large quantity in that of the hall, entries, and stairway on every story, and also in that of five chambers. The papers had been on for a number of years. There was no arsenic in the paper on the walls of the rooms occupied by the sick

¹ Hearing before Committee of Massachusetts Legislature, 1891, p. 83.

² *Ibid.*, p. 66.

³ This statement does not quite correspond with that printed in the report, but is in accordance with information given me recently by Dr. Putnam. In default of a bacteriologic examination of the lungs in the two fatal cases, it must remain an open question as to the part, if any, played by arsenic in the production of the fatal lung-disorder. The other symptoms, however, seem less open to doubtful interpretation.

⁴ Repeated examinations of the urine have been made for arsenic by Wood. The amount diminished gradually, and April 24th the arsenic had practically disappeared, eighty-four days after removal from arsenical surroundings.

children; but I found that they always slept with their windows shut and the doors into the entry open. The boys were at once removed from the house, and the papers were replaced by some free from arsenic. The patients rapidly recovered, and during the three years which have since elapsed have never had any recurrence of such symptoms. The urine of one of the boys has been examined for me within a fortnight and found to be free from arsenic. My supposition is that as the entry papers became worn, the arsenic was gradually set free in larger quantities and contaminated the air of their bedrooms, which were constantly in free and uninterrupted communication with the entry.

In none of these cases can the arsenical origin of the symptoms be regarded as absolutely proved; but I should like to call attention to the parallelism between the symptoms and those which are described in the text-books as occurring from contact with or ingestion of the drug. A few such cases may be only suggestive; but when they are multiplied manifold, as can easily be done by anyone who cares to consult the literature, the evidence furnished by them seems to me to be such as is worthy of serious consideration.

It may be mentioned that a number of European governments recognize arsenic as a source of danger in articles of domestic use.

Let us now consider the objections which can be raised—the case for the defence. In so doing I shall say what I think can be said to meet those objections, just as I called attention to some weak points in the argument for the plaintiff.

First, there is the alleged immunity of workmen and others whose occupation brings them into close relation with arsenic. A number of wall-paper manufacturers and dealers testified before the Committee of the Massachusetts Legislature of 1891 that during the many years they had been in the business they had never known of any injurious influence being exerted on themselves or their employes from arsenic. A number of such cases are, however, reported. Draper¹ mentions several cases among those employed in wall-paper shops, while cases of poisoning from green tarlatan, artificial flowers, and among taxidermists are by no means rare.² E. S. Wood tells me that several workmen have stated to him that they suffer every time they remove an arsenical paper from the walls of a room. It is quite conceivable that workmen should not care to mention their disabilities, if not too great, to their employers, for fear of losing their places. The symptoms in these cases are essentially the same as those often seen in the consumers of arsenical goods. Moreover, the conditions are somewhat different between prolonged nightly exposure to the air of a bedroom, for instance, covered with an arsenical wall-paper, and the exposure to which a clerk in a paper-

shop is subjected. The papers are there tightly rolled and stored on shelves. But small portions of the rolls are displayed to customers, and only for a short time. The shop, moreover, must be dry, or the papers would mildew and become unsalable. Arsenical dust is, therefore, the only thing to be dreaded. As far as reports in medical literature go, there certainly seems to be a relative immunity among workmen. Whether this immunity is really as great as it seems is a question which appears to me worth further study. The observance of simple precautions can, undoubtedly, do much to lessen the danger.

Next, we have the fact that far larger quantities of arsenic in solution—*i. e.*, in a condition ready for immediate absorption—can be and constantly are given medicinally by the mouth with impunity or only transitory gastro-intestinal disturbance than it is conceivable should, save in very rare instances, enter the system from domestic sources. Chemists of considerable experience in the examination of urine for arsenic recognize this fact, and I have repeatedly known the report to be made that the amount was so large that it must, in part at least, have been taken somehow by the stomach. Elimination after ingestion is slow. In a patient of mine to whom twenty-seven drops of Fowler's solution were given during three days, arsenic was detected in the urine by Wood until the fifty-eighth day. In another, who received sixty-nine drops in seven days, eighty-two days were required for elimination. But the conditions of gastric administration and exposure to arsenical papers or goods are not identical. There are reasons for believing, as will appear more fully later, that some gaseous form of arsenical compound may be set free in consequence of the growth of certain moulds, and that in this form and inhaled the poison may be more active than when it enters the system exclusively through the stomach. But whether arsenic is given off as a dust or gas, the duration of the exposure is generally quite different; that is, it is likely to be far longer in the domestic cases. In either case habituation may, but does not necessarily, ensue.

This leads us to the next objection, that arsenic is found in the urine of many persons who are quite free from indications of subjective or objective disease. J. J. Putnam has conclusively shown that the same is true of another metal, lead, the toxic influence of which on some persons is admitted by all. If this objection is to have weight with one metal, it would seem to have equal weight with the other. Idiosyncrasy, which includes relative immunity and habituation, must relate to both or neither.

The objection that arsenical poisoning of domestic origin occurs only in Boston would be too trivial to notice here were it not that it has been seriously urged, though, it is true, mainly by interested parties. It so happens that the question has received more attention in Boston than perhaps elsewhere in the United States, but the statement that cases are not observed elsewhere argues simply the ignorance of the person making the statement. There are plenty of unrecognized relations between cause and effect, plenty of unclassified conditions which are constantly before our eyes if we could only see them. The general recognition of peripheral neuritis is a very recent matter.

¹ Third Report Massachusetts State Board of Health, 1872, p. 17.

² E. G. Cutler reports his investigation of a Lowell box-factory. Two cases of illness among the employes seem fairly attributable to the arsenical green and red papers used to cover the boxes. These contained about eight grains of arsenic to the square foot, but were heavily sized. The health of the girls in general was excellent. Much attention was given to the cleanliness and ventilation of the work-room, and other precautions were taken to prevent injury. Seventh Report, Massachusetts Board of Health, 1876, p. 546.

The risk is considered sufficiently great to warrant legislative interference in Sweden, Germany, Russia, Austria, and Denmark. In France no regulation exists, except with reference to articles of food and drink and children's toys, though the government has sent circulars to manufacturers warning them of the penalties to which they are liable if accidents result from the presence of poisonous substances in their goods. In England there is no law, but there has been considerable agitation on the subject, especially by the National Health Society and the London *Lancet*.¹ The very agitation has, however, been followed, as it is stated, by a marked diminution in the amount of arsenic contained in articles for domestic use. An abstract of the laws on this subject will be found in the report of the Massachusetts Board of Health for 1885, in an article from the pen of E. S. Wood, entitled "Arsenic as a Domestic Poison." This abstract is taken from the English National Health Society's report for 1883.

I have tried to ascertain what changes, if any, have been made in these laws since 1885, and am indebted to Vorban² for most of the statements here immediately following. The Swedish laws, the most stringent and precise, remain the same since 1883. The maximum amount of arsenic permissible in wall-papers, materials for artificial flowers, and some other articles, is about one-fourteenth of a grain to the square yard; in textile stuffs and yarns and other specified articles one-seventh of a grain to the square yard. The process to be used in the chemical determination is carefully defined. The German law of 1882 was found to be too stringent in that it absolutely prohibited arsenic in wall-papers and articles of apparel. The metal is so widespread and the means for its detection are so delicate that minute traces can be found, oftentimes in spite of the best faith and most painstaking care on the part of the manufacturer. The law of 1887, which went into effect May 1, 1888, allows a maximum of two and a half grains to the square yard, provided that the arsenic is in a form insoluble in water. An exception is also made in favor of colors which do not contain the arsenic as a constituent part, but simply as an impurity; and this at the most in a quantity unavoidable in the ordinary methods of manufacture. Obviously, then, exceptions might afford opportunities for dispute and a loophole for a dishonest manufacturer. The Chancellor of the Empire is authorized to issue directions as to the process to be used in the detection and estimation of the amount of the metal.

The Russian general law of 1876 seems to be still in force. It allows a maximum of from one-seventh to one-eighth of a grain of arsenic to the square yard in wall-papers. There are some local regulations, as in Riga and Dorpat. In the latter place the maximum is fixed at one-fifteenth of a grain per square yard in wall-paper and one-thirtieth of a grain in cloth.

In this country, Massachusetts takes the lead in the agitation on the subject. The ball was opened by Dr. Draper in 1872, and four unsuccessful attempts have been made to secure legislation. The act of 1891 prohibits arsenic in confectionery and children's toys, and authorizes the Board of Health to expend a sum not ex-

ceeding one thousand dollars on "such investigations and inquiries as they deem necessary as to the existence of arsenic in any paper, fabric, or other article offered for sale or exchange." The outcome of this is the report of Prof. W. B. Hills,¹ with regard to the conclusions of which I shall speak later.

Recognition of the danger which may exist of domestic arsenical poisoning is found in the reports of Boards of Health of Michigan for 1873, California for 1874, Rhode Island for 1878, Connecticut for 1879, Pennsylvania for 1887, New York for 1888, and Maine for 1889, as well as in those of Massachusetts for 1872, 1889, and 1892. In the year 1874 the Committee on Poisons of the Michigan State Board of Health prepared one hundred books of specimens of poisonous papers bought from first-class dealers in various cities, and placed these books in public libraries. The book was entitled *Shadows from the Walls of Death, or Arsenical Wall-papers*. This title was followed by a quotation from Leviticus, 14th chapter: "And behold, if the plague be in the walls of the house, with hollow strakes, greenish or reddish, . . . Then the priest shall go out of the house to the door of the house, and shut up the house seven days. . . . And he shall cause the house to be scraped within round about, and they shall pour out the dust that they scrape off without the city into an unclean place." I find the plague referred to is leprosy. One lady is said to have been poisoned by examining this book.

In the report of the State Board of Health for Pennsylvania for 1887, in the report of the Committee on Adulterations, Poisons, etc., it is stated that but little work has been done during the year for lack of funds and by reason of the expensiveness of chemical investigation, although "in the manufacture of certain foods employed in our households, wall-papers, textile fabrics, dye stuffs, etc., we shall find abundant scope for the operation of the Board's conserving energies." The only State besides Massachusetts in the laws of which wall-paper is mentioned in connection with poisonous pigments, as far as I can find, is New Hampshire, and here the matter is left in such a way that it can have no direct practical result.

We see, then, that the positive evidence is strong and comes from many sources. It seems to me far stronger than the negative evidence which I have tried to present fairly. It would certainly appear to be undesirable that the public should be exposed to an influence which there is so much reason to believe to be injurious, especially when such exposure is quite unnecessary. In proof that it is unnecessary I will call only three witnesses.

Prof. W. B. Hills reports in 1892 to the State Board of Health of Massachusetts, that in the last ten years decided improvement has taken place in the wall-papers sold in the State. About 3 per cent. of the papers manufactured to-day contain more than one-tenth of a grain of arsenic to the square yard, against, approximately, 30 per cent. ten years ago. Between 60 per cent. and 70 per cent. of the papers sold in the State are free from arsenic. About 90 per cent. contain less than from one-twentieth to one-tenth of a grain per square yard, an amount which can be harmful to probably very few people. Prof. Hill states that arsenic is not essential to

¹ 1892, ii, 43.

² Inaugural Dissertation, Dorpat, 1889.

¹ Report of Massachusetts State Board of Health for 1892.

the production of the colors, and that those which were formerly arsenical can now be made without that metal. An absolutely exact comparison between the examinations made from 1879 to 1881 and from 1889 to 1891 is impossible, for the reason that during the latter period the so-called Marsh-Berzelius test was used, while in the earlier period the original Marsh test was followed. The modified method is much more delicate than the Marsh test and detects quantities of arsenic which escape the latter. A still more striking improvement is shown in the "glazed" and "plated" papers used in kindergartens, book and pamphlet covers, to wrap lozenges, etc. The use of Paris green is much less common in tickets, show-cards, and the like than it was ten years ago.

Mr. Henry Saltonstall, the treasurer of the Pacific Mills, one of the largest cotton mills in the world, testified before the Legislative Committee of 1891,¹ with authority to speak for four of the six print works in Massachusetts, as follows: "I wish to say in behalf of them (the print works) that not only are we averse to a law restricting the use of arsenic, but we welcome such a law. . . . We would be glad to have a reasonable and fair law which should prohibit the use of arsenic by any mills inside the State or factories outside the State which have their goods for sale here. . . . I don't dare to say what would be the danger-limit, but I think if one-fiftieth of a grain of soluble arsenic were allowed per square yard we could come down to this limit in textile fabrics or furniture." The proposed law, which failed to pass, allowed one-twentieth of a grain per square yard, not distinguishing between the soluble and insoluble forms. This is strong testimony to show that there is no necessity for the use of dangerous quantities of arsenic, coming, as it does, from a most competent general chemist, and also from a very large manufacturer, who has presumably consulted with his own chemists before he committed himself.

Mr. Jones, student-assistant in the chemical laboratory of the Harvard Medical School, showed me an old sample of green tarlatan which contained one-half its weight of arsenic. He tells me he has bought samples recently and failed to find any arsenic in them. Until very lately many of the red-striped bed-tickings contained much arsenic, but they, too, show the effect of agitation on the subject. In connection with the preparation of this paper I meant to experiment on myself. Professor Wood kindly examined my urine and failed to find arsenic. I then tried to buy arsenical bed-ticking to cover my pillow, taking from Wood a sample which was largely impregnated. Both pieces which were bought for me proved to be non-arsenical, so I was unable to complete my experiment and find out whether my urine became arsenical after sleeping on this pillow-covering.

We are next led to the question as to what amount of arsenic is allowable, a question which nobody seems prepared to answer absolutely. It is, however, probable that an amount not exceeding, say, one-fifteenth of a grain to the square yard, irrespective of solubility and form, may be regarded as practically innocuous. In the German experience we find one explanation for the difficulty in framing a law which will work no injus-

tice to manufacturers or harm to consumers. The best tests are so delicate, and the presence of minute traces of arsenic so general in one form or another that absolute prohibition is really impracticable. A satisfactory law must, like the Swedish, not only fix the maximum allowable amount, but must also prescribe the method of chemical analysis. It is probably not practicable to distinguish, legally, between soluble and insoluble arsenic.

Some manufacturers and dealers argue that the diminution in the amount of arsenic contained in papers and fabrics during recent years shows in itself that no law is necessary. But this diminution cannot be attributed to anything except the agitation of the subject, a continuance of which demands considerable public spirit on the part of the agitators, whose ranks are not generally largely recruited from among the moneyed class. It is, moreover, doubtful whether the benefits of the agitation in Massachusetts extend widely beyond the State. Arsenical goods are, in the main, unsalable there; but no questions are asked in most parts of the country. If purchasers ask no questions, even in Massachusetts, they are liable to receive dangerous goods.

The question is interesting and also important, as to the manner of introduction of arsenic into the system from domestic sources. When the arsenical material comes into close contact with the skin, whether broken or unbroken, as in stockings or in arsenical caustic paste, the avenue of entrance is plain. When absorption takes place from a distance, as in the case of wall-papers, the arsenic is set free either in the form of dust or in a gaseous state. In the former case it is swallowed and inhaled; in the latter, inhaled alone. There can be no question that arsenical dust is detached from papers, fabrics, water-colors, sometimes from curtains or carpets. The dust which has settled on ledges, etc., in rooms containing arsenical papers has been analyzed and found impregnated with the metal. The ease with which the poison is detached varies, of course, much with the character and surface of the paper and material. Some papers grow much more dangerous with age as they become worn; others are highly dangerous from the start. Covering an arsenical with a non-arsenical paper does not necessarily render the former innocuous. Varnishing an arsenical paper renders it safer, certainly for a time, but does not secure safety. Arsenic is sometimes used as a preservative for the paste which fastens the paper to the wall.

I think it was Fleck¹ who, about twenty years ago, first supported by scientific evidence the suggestion which had been previously made that a gaseous form of arsenic may, with the aid of moisture and in the presence of organic substances, be set free from arsenical pigments. Hamberg² detected the metal in the atmosphere of rooms with arsenical papers. The nature and manner of production of this gas has been studied by Husemann,³ Selmi,⁴ and very recently by Gosio.⁵ The work of the latter is not very readily accessible, and I therefore venture to abstract a portion of his conclusions.

¹ Zeitschrift f. Biologie, 1872, viii, 444; et seq.

² Schmidt's Jahrb., 1875, Bd. clxv, 240.

³ Virchow-Hirsch's Jahresb., 1881, S. 413.

⁴ Schmidt's Jahrb., 1875, Bd. clxviii, S. 60.

⁵ Monograph, Ministry of the Interior, Scientific Laboratories of the Board of Health, Rome, 1892.

¹ Hearing before the Legislative Committee on Public Health, 1891, pp. 38 and 41.

It is proved beyond question that arsenical gases can be developed by the growth of moulds in contact with arsenical chemical compounds. Only a few moulds possess this property. While many moulds can live and grow in the presence of arsenical compounds, only four have thus far been proved to possess the power of setting free arsenical gas: *mucor mucedo*, *aspergillus glaucus*, *aspergillus virens*, and *penicillium brevicaulis* (the most important).

The conditions which favor the production of arsenical gas by these moulds are, first, those which favor in general the life of the fungus, abundance of oxygen, moisture, nutritious material, and suitable dosage of arsenic. Secondly, those which depend on the facility of the transformation of the arsenic. Thus arsenic acid, and the arseniates and arsenites of sodium and potassium are more easily transformed than the arsenite of copper. Third, the presence of carbohydrates (starch pastes). These moulds can, however, decompose arsenite of copper from papers even when they grow in the paste or glue fastening them to the wall. In the case of *mucor mucedo*, at least, the quantity of arseniuretted hydrogen evolved is small in comparison with another more important compound, probably the union of the metal with organic alcohol or aldehydic radicals.

These conclusions are the result of work up to May, 1892. Its further prosecution is promised. They are quite confirmatory of the English reports which suggest that arsenical wall-papers exert a more deleterious action during moist than during dry weather, and they throw important light on one method of domestic poisoning.

The main, if not the sole avenue of elimination of arsenic which has got into the circulation in one way or another is the kidneys. It is a practical point worthy of note that we do not as yet know any direct means to further the elimination. The treatment of chronic arsenical poisoning resolves itself into, first, stopping further absorption; second, general hygiene; and third, the treatment of such symptoms as may require it. Active catarrhal symptoms are likely to subside pretty quickly on the removal of the toxic agent. Neuritis is to be treated by massage and electricity, just as when due to other causes.

The prognosis is good, as regards both life and recovery. Fatal cases are rare, and recovery is relatively quick, unless neuritis is extensive or very advanced, or the arsenical poisoning is only one of a combination of causes producing ill health.

The method of detection used by all the gentlemen connected with the chemical department of the Harvard Medical School is the Marsh-Berzelius test, which is sufficiently delicate and easy of application. In determining the length of time necessary for the elimination of arsenic, Wood has used the method of Snger.¹

The conclusions I feel justified in drawing from the foregoing considerations, which I have endeavored to strip of unnecessary detail, are the following:

1. There is overwhelming evidence to show that many arsenical articles which enter into common domestic use are dangerous to health.

2. That while it is impracticable to demand absolute freedom from arsenic in these articles, the presence of injurious quantities of the metal is quite unnecessary.

3. That, therefore, carefully framed legislative restriction, if possible uniform throughout the States, is desirable.

4. That it is the duty of the medical profession everywhere to study the question, and to lend its powerful aid in forming public opinion and otherwise securing such legislation.

I wish to take this opportunity of expressing my indebtedness to Drs. E. S. Wood and J. J. Putnam and to Dr. J. L. Morse for indispensable assistance in searching the literature.

ORIGINAL ARTICLE.

ANALYTIC NOTES ON SOME COMMERCIAL DISINFECTANTS.

BY HENRY LEFFMANN, M.D.,
OF PHILADELPHIA.

THE materials commonly known as Chlorinated Lime and Chlorinated Soda are among our most efficient disinfectants, being cheap, safe, and certainly germicidal. Their chemistry is somewhat obscure. They are usually regarded as hypochlorites, associated with chlorids, but this is at least doubtful as regards the calcium compound. However, there is no doubt that the main efficiency is due to some chlorin compound having practically the functions of a hypochlorite, and the tests for quality assume this to be the state of combination. The so-called chlorinated lime, or "bleach," finds enormous consumption in various industries, and as it is bought on assay certificates, its quality is as high as can be practicably produced. The cost of ocean transportation being the same for all grades, it is not likely that any very inferior grades will be found in the American market.

The chlorinated soda, or Labarraque's solution, is made from the calcium compound, and is, of course, influenced by the composition of the latter. It is worthy of note, that the disinfecting action of these bodies may be more thorough than is generally supposed, for the reason that they act powerfully on many ammonium derivatives, completely decomposing them, and liberating the nitrogen in the gaseous form. Now, the products of microbic action are in many cases ammonium derivatives, and these are not only often toxic, but they are capable of serving as food for other organisms. The destruction of these products, therefore, may contribute materially to the sterilization of the infected matter. The direct germicidal action, and also the chemical effects just mentioned, depend on the amount of chlorin held loosely (usually considered to be in the form of hypochlorites), that which exists as chlorid being useless. The former is generally designated as "available chlorin," and it seemed worth while to examine some of the brands in the market, as much use of these bodies may be made in the near future.

¹ Boston Medical and Surgical Journal, April 27, 1893.

The method of assay, depending on the amount of arsenious acid oxidized by a given weight of the substance, need not be given in detail, as it is described in analytic manuals. In an article in the *Ephemeris*, for April, 1892, Dr. Squibb has given much interesting information as to the calcium and sodium hypochlorites, pointing out that the Pharmacopeia of 1880 changed the method of preparing chlorinated soda by reducing largely the amount of sodium carbonate, a change which he regards, and I think justly, as disadvantageous. He shows that the older solution, containing excess of sodium carbonate, has a more complete decomposing action on ammonium derivatives, and probably also deteriorates less rapidly. As a consequence of the change in formula, the solution of chlorinated soda furnished by many druggists contains a notable excess of calcium salts. The Pharmacopeia of 1880 also changed the names to chlorated lime and chlorated soda.

The samples herewith enumerated were obtained through retail druggists in the original packages, and in as fresh a condition as usually sold. In justice to the dealers, it should be mentioned that these preparations are subject to steady deterioration, not only through the influence of the moisture and carbon dioxid of the atmosphere, which form carbonates and liberate the hypochlorous acid, but a slow conversion into chlorate also occurs in a manner not yet thoroughly understood, and this change also reduces the available chlorin. In some of the brands, the results being low, two samples were tested.

SOLUTION OF CHLORATED SODA.

Brand.	Per cent. available Cl.	Calcium salts.
1. Bullock & Crenshaw	2.48	Present.
2. Smith, Kline & Co.	2.46	"
3. Powers & Weightman	1.31	None.
4. Rosengarten & Sons	1.24	"
5. Laboratory sample, U.S.P. 1870 (made by Squibb's formula).	1.8	"
6. Eau de Javelle	1.06	"
(made in lab. by French formula).		

CHLORATED LIME IN PACKAGES.

Brand.	Per cent. available Cl.
1. Bird Food Co.	29
2. Sailor	31
3. Crescent	22
4. "	20
5. Red Riding Hood	33
6. Brookman's	22
7. "	25
8. Golden Fleece (English)	30

The foregoing statements show that the commercial forms of chlorin disinfectants are mostly of good quality. The sodium preparation (Labarraque's solution), as prepared by the local druggists, presumably according to the latest edition of the Pharmacopeia, contains calcium, but may be easily

freed from the latter, and improved by adding about an ounce of common washing-soda to one quart of the liquid, allowing the precipitate to settle, and decanting the clear liquid. In hospitals, and wherever there is intelligent aid available, it will be economical to prepare the sodium solution directly from the commercial chlorated lime of good quality, using the following formula, approximately that of the U. S. P. 1870:

Chlorated lime	1 pound.
Washing-soda	2 pounds.
Water	2 gallons.

In making solutions of chlorated lime, it is best to triturate the article with water to the consistence of thick cream, and then diffuse this mixture in the larger volume. If a mass of the material is simply shaken up with water, much will not dissolve. In this connection, it may be well to note that good chlorated lime is a nearly inodorous powder. If it is lumpy or pasty, or has a strong chlorin odor, it is somewhat decomposed. Solutions must not be heated. Some of these preparations retail at too high a price. Thus, sample No. 4 retails at 50 cents a bottle, of about $1\frac{1}{4}$ pints, while other samples, much richer in available chlorin, sell for 20 cents a quart. Good chlorated lime can be bought in small lots at less than 10 cents per pound, washing-soda at 5 cents per pound, which would make the cost of the Labarraque's solution such that it could be sold at 20 cents per quart, including bottling, with profit. Some years ago a well-known firm of manufacturing chemists had on the market a solution of sodium hypochlorite, containing, according to my own assay, about 5 per cent. of available chlorin, but this is not now obtainable. Such a solution would, doubtless, be of great value as a disinfectant.

CLINICAL MEMORANDA.

THERAPEUTIC NOTES.

BY SOLOMON SOLIS-COHEN, M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA POLYCLINIC; ONE OF THE PHYSICIANS TO THE PHILADELPHIA HOSPITAL, ETC.

II.

HYDROGEN DIOXID AND OZONIC ETHER.

THE use of aqueous and ethereal solutions of hydrogen dioxid was introduced into medical practice by B. W. Richardson in 1858. My own experience with these agents dates from 1882. During the last five years they have become generally known as to some limited portions of the great field of usefulness explored, surveyed, and delimited by Dr. Richardson, but many of their uses are as yet little availed of. It is of some of these little-known uses that this note will speak.

The general employment of solutions of hydrogen dioxid is almost exclusively as an external application to destroy pus and germs. It has a much wider range

of applicability as an internal remedy. Solutions containing the drug are best made with glycerin and should be given in water—about three ounces or half a tumblerful, with the dose.

In cases of *pulmonary tuberculosis*, the aqueous solution of hydrogen dioxid, ten-volume strength, may be given in doses of from one to four drams, three or four times a day, for the purpose of introducing oxygen into the blood. There is no doubt that oxygen is in this way absorbed from the stomach and combines with the hemoglobin of the red corpuscles as readily as if taken in by the lungs in ordinary respiration. The remedy is counter-indicated when there is persistent high fever, but not in cases of hectic fever, during the remission. Its greatest utility is in the early stages, when pulmonary infiltration can first be demonstrated, or in those cases in which physical signs are ill-defined, but the rational symptoms indicate what we call, for want of a better term, "incipient phthisis." When anemia is a feature of the case, hydrogen dioxid may be usefully combined with a ferruginous preparation, Richardson preferring the "syrup of the superphosphate of iron."

In some cases attended with constant irritative and unproductive cough, the ethereal solution called by Richardson "ozonic ether" (which contains thirty volumes of hydrogen dioxid) is exceedingly useful as an anodyne and antispasmodic. One-dram doses, in water, may be given; and sometimes it will be found advantageous to make a mixture of equal parts of Hoffman's anodyne and ozonic ether, giving it in doses of one or two drams. Such a prescription likewise assists the digestion and assimilation of fatty foods, especially of cod-liver oil.

Another useful expedient in cases of pulmonary tuberculosis in which it is considered advisable to give medicaments to check cough, is to dissolve the proper dose of codeine sulphate in a solution of hydrogen dioxid. The alkaloids readily dissolve in the aqueous solution and there is perfect compatibility. A little alcohol sometimes aids solution, and, as a rule, glycerin should be added to make the dose "smoother." It is best to make mixtures containing not more than twelve doses, to avoid the change that might occur in some instances from long standing. In a three-ounce mixture, of which the dose is two drams, about six drams of glycerin is a good proportion.

In *whooping cough*, hydrogen dioxid invariably shortens the course of the disease and modifies the symptoms favorably; in some instances almost marvellously. The dose for a child of three years is from half a dram to two drams of the ten-volume solution, every two hours. In severe cases, ozonic ether may be added or substituted, in such doses as the ether permits, for hydrogen dioxid is not likely to do harm in any dose. I have usually given fifteen minims of the ethereal in one dram of the aqueous solution. Sometimes a minute dose of codeine may be advantageously added; often a drop or two of eucalyptol will be useful when there is concomitant bronchitis. Lately, I have in some cases alternated ozonic ether with bromoform.

Inhalations of "ethereal oxygen," which are useful not only in pertussis, but also in many other conditions, may be given by placing in a Wolff bottle, an ounce or two

of the aqueous solution of hydrogen dioxid with half an ounce or less of ozonic ether, and allowing a solution of potassium permanganate in water (eight grains to the ounce) to drip in from a stoppered funnel placed in the stopper of one neck of the bottle, while the gas evolved is inhaled from a tube passing through the stopper in the other neck. A wide-mouthed bottle, with two tubes passing through the cork or rubber stopper, will likewise answer. When a stoppered funnel cannot be obtained, the solution of potassium permanganate is added to the solution of hydrogen dioxid in the bottle, and one of the necks or tubes being immediately stoppered, the gas can be inhaled from the other. This requires a bottle large enough to contain the greater volume of oxygen evolved at once. Eucalyptol, terebene, menthol, and other terebinthinate, aromatic, or balsamic agent may be added, and will pleasantly flavor the vapor, as well as add in some cases to its therapeutic efficacy. The ozonic ether may be omitted when the vapor of ether is not desired, as it is not essential to the production of oxygen in this way.

In *anemia and chlorosis*, I know of nothing that will so soon restore the corpuscles and coloring matter of the blood to a normal standard as the combination of hydrogen dioxid with iron. Richardson, as already stated, uses a mixture of solution of hydrogen dioxid, glycerin, and syrup of the superphosphate of iron. I have used this, and also a mixture of tincture of ferric chlorid (f3ij), dilute phosphoric acid (f3v), glycerin (f3ij), and solution of hydrogen dioxid, ten-volume (q. s. ad f3iv), of which the dose is from one to four drams (usually two drams), in water, three or four times a day. The use of hydrogen dioxid, in conjunction with arsenic, is now being tested in a case of pernicious anemia, but it is too early to speak of results. I would strongly urge the practice on those who have the opportunity to carry it out. The doses should be large—as much as a table-spoonful of the ten-volume solution.

In *the debility following influenza*, of which some extreme cases have come under observation, I have found the following combination of great use.

R.—Strychnine sulphate . . . ½ grain.
Diluted phosphoric acid . . . 4 fl. dr.
Glycerin . . . 6 fl. dr.
Solution hydrogen dioxid (ten volume) to make 3 fl. oz.—Mix.

Dose: Dessertspoonful in one-half tumblerful of water, three times a day, before meals.

The same or a similar mixture has been beneficial in neurasthenia and other chronic conditions of depression or exhaustion, and after recovery from debilitating diseases, to promote convalescence. It may also be used with advantage in pneumonia and other fevers when a cardiac tonic is indicated.

I have elsewhere called attention to the occasional effect of large doses of hydrogen dioxid in slowing and strengthening the pulse, similarly to digitalis; and this action is of advantage in pneumonia, as is likewise the introduction of oxygen into the blood by way of the alimentary canal, so that the combination of hydrogen dioxid with strychnine is especially applicable in that affection.

In *gastro-intestinal affections*, attended with flatulence

and eructation, I have often found hydrogen dioxid useful as an antiseptic, and also as a stimulant to the regeneration of a healthier epithelium—that is, if we may judge of histologic processes by clinical results. It is best given about five minutes before meal-times, and should be conjoined with lavage, or with the drinking of hot water from half an hour to an hour before meals.

In *diabetes*, hydrogen dioxid is useful, and one of the best methods of giving codeine in that affection is according to the method of Richardson, in which each dose consists of one-sixth of a grain (or more) of codeine sulphate, about twenty minims each of alcohol and glycerin, and enough hydrogen dioxid solution to make two fluidrams.

In conditions of *collapse* and *narcosis* hypodermatic injections of ozonic ether often serve a useful purpose in averting temporary dangers, in prolonging life, and in promoting recovery.

In *phosphorus-poisoning*, hydrogen dioxid should be useful as an oxidizing agent. Its administration could be followed by that of some organic salt of sodium or other alkali.

TWO OBSTETRIC CASES IN WHICH CHLOROFORM HAD NO EFFECT.

BY GEORGE EDGAR THOMPSON, M.D.,
OF NEW ALBIN, IOWA.

CASE I.—I was called to see Mrs. R. at 5 A. M. The woman was up and around the room, suffering with weak and irregular pains. On examination I found the os dilated sufficiently to admit the tip of my index finger. I at once ordered quinine sulphate, gr. xv, with a view of increasing the pains, but the condition remained unchanged until 10 o'clock, when the pains became more regular and more severe. The woman was very nervous, and at 10.15 had an hysterical convulsion. Ordinarily I can control the spasms of labor with chloroform, and I instituted the inhalation at once, but without the least effect. I then gave morphine sulphate, gr. $\frac{1}{4}$, atropine, gr. $\frac{1}{16}$, and repeated these in thirty minutes. At 12.15 o'clock the woman was delivered of a healthy child, weighing nine pounds. Immediately the convulsions ceased, and recovery was thereafter rapid.

CASE II.—Mrs. M., twenty-three years, a deutipara, was delivered of a large child, the labor being difficult. To relieve the intensity of the pain I instituted the inhalation of chloroform, but, although I gave it as fast as possible and as much as could be borne, it did not have the least effect.

The chloroform used was the best. As to the cause of its failure to act I am at a loss for an explanation.

A TEMPORARY CHANGE IN THE AXIS OF ASTIGMATISM.

BY GEORGE M. GOULD, M.D.,
OF PHILADELPHIA.

AN unusual and peculiar cause of a change in the astigmatic axis of a single eye lately occurred in my practice. The patient was a man, forty-two years of age, whom I had twice refracted during the past five years, finding each time the symmetrical axes of a moderate degree of compound hypermetropic astigmatism to be, O. D., 70°, O. S., 110°.

Latterly, symptoms of eye-strain had appeared, and upon testing the refraction of the right eye I found that the axis had changed to about 110°, that of the left remaining as before. As this would break the law of symmetry, and, as moreover, the man's age and refraction-history made such a switching of the axis quite strange, I was puzzled to account for the phenomenon. The explanation was found to consist in the existence of a large Meibomian cyst in the upper lid of the eye in question, that had escaped my notice until I examined the eye more carefully. I opened the cyst and cleaned out its gelatinous and cheesy contents. In a few days I re-tested the refraction and found the old symmetrical axis reinstated. The pressure of the nodule had evidently temporarily changed the normal corneal symmetry.

A CASE OF TRANSPOSITION OF VISCERA.

BY GEORGE WOODWARD, M.D.,
OF NEW HAVEN, CONN.

ANNIE F., a German, aged sixteen years, suffering from intermittent malarial fever, came under my observation at the New Haven Dispensary, April 17, 1893.

Physical examination revealed a complete transposition of heart, liver, stomach, and spleen. The relative positions of these organs are normal, with the exception of the spleen, which is considerably enlarged, a result, presumably, of repeated malarial attacks.

The girl has enjoyed comparatively good health all her life and is quite unconscious of her disarranged internal economy, and promises to hold the interesting "post" a long while in abeyance.

Dr. L. S. DeForest, chief of the medical clinic, has confirmed the results of my physical examination, and it is by his courtesy that I am able to report the case.

COLLEGE AND CROWN STS.,
NEW HAVEN, CONN.

MEDICAL PROGRESS.

Oophorectomy for the Relief of Osteomalacia during Pregnancy.—RASCH (*Zeitschr. f. Geburtshülfe u. Gynäkol.*, xxv, 2, p. 271) has reported the case of a woman, forty-one years old, who had borne three children and was pregnant for the fourth time. The first child was living and well; the second was rachitic and died of asthma before reaching its fifth year; the third died of convulsions when it was eight months old. The pregnancy had advanced to the fourth month. Symptoms of osteomalacia were marked; of these, the most conspicuous were pain and skeletal deformity. On account of the urgency of the symptoms it was decided to induce labor and subsequently remove the ovaries. These procedures were accordingly carried out, and the woman soon progressed to satisfactory recovery.

Periodic Epileptic Sleep-seizures.—JACOBY (*New York Medical Journal*, May 20, 1893, p. 541) has arrived at the conclusion that sleeping-attacks occurring alone or in combination with other symptoms, if of brief duration and followed by amnesia, are probably of epileptic character. If somnambulism, particularly of a noisy kind, is present, probability becomes certainty.

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SATURDAY, JUNE 3, 1893.

THE MAKING OF MEDICAL BOOKS.

WHEN the wise man of old gave utterance to the oft-quoted remark, "Of making many books there is no end," he would seem to have been speaking for all time, gazing with prophetic eye into the future. For in his day there were few readers, fewer writers, probably still fewer thinkers, and, of course, no printing-presses. It may be, indeed, that we under-estimate the cultivation of that age. Possibly there was a larger class of educated men, with a wider range both of theoretic and of practical knowledge, than would appear from the scanty records that have come down to us. Yet no one thing in the history of the world more strikingly illustrates its growth and progress than the vast additions to literature that have been made even within the memory of persons now living.

Had KING SOLOMON been a man of our own day, and had he referred to medical works only, he would hardly have qualified his statement of the case. Cyclopedias and systems, text-books, handbooks and compends, some embracing a wide range of subjects, others limited to special departments, succeed one another with bewildering rapidity. Some are diffuse, and some are terse. Many writers—why, we need not now surmise—quote the opinions of HIPPOCRATES, CELSUS, and all of the other ancient

worthies, reminding one of that charming bit of satire, *Knickerbocker's History of New York, from the Creation of the World to the Present Time*.

Books have always had a fascination for us. We have in the course of years gathered a not inconsiderable number upon our own shelves, and have had access to some of the great public libraries. We have watched with interest the constant additions to the long catalogue of works intended by their authors to take a permanent place in medical literature. But, after all, we are forced to the opinion that in this great mass of printed matter there is very little indeed that is really new or valuable. Eliminate all the repetitions of things already known, all the non-essential padding, and the residue would be of small bulk.

Why, then, does this enormous reproduction of old material go on? There must be a demand for it; it must benefit somebody. For a book to exist, there must be an author or compiler, and a publisher; for it to succeed there must be a third party—a public that will buy it. Of the three, it is the general belief that, as a rule, the publisher derives the largest and the surest returns. The author may obtain reputation, practice, and, perhaps, pecuniary profit. What the readers shall gain depends partly upon the value of the author's work, partly upon the care and intelligence with which it may be studied.

Some books win success by their intrinsic merit; their authors have written from experience and profound study, and know how to put their views in an impressive and instructive form. Occasionally a writer with a striking and brilliant style makes a hit, even if there is doubt as to the safety of his guidance. And from time to time subjects come up and engage attention, so that everything written upon them will be read. But, perhaps, the greatest popularity is achieved by convenient compilations.

No one book holds its own permanently. There are sure to be changes of opinion, changes of practice, and even mere caprices of fashion, as much as in matters of dress. We well remember many years ago saying to a sagacious and far-seeing publisher that the time would come when there would no longer be any demand for a most valuable, learned, and popular treatise, which in his hands had already gone through many editions. He received the suggestion with utter contempt and incredulity. He and the author of the book are long dead, but the book died before either of them.

Letter-writing is one of the lost arts. With the advent of the telegraph people learned to condense what they had to say into the briefest compass. May it not be that something analogous will happen to book-making, so that authors will take for granted what is already established, and simply issue bulletins containing the essence of what they have to lay before the profession?

EDITORIAL COMMENTS.

The Business Aspect of the Practice of Medicine.—The Detroit Medical and Library Association has adopted what is described as a fee-bill. This is a scale of charges that is "intended to guide rather than govern members. The maximum and minimum figures have reference to the degree of responsibility and time consumed in a given case, rather than to the circumstances of the patient, which may justify a lower or a higher charge. All bills should be considered due when services are rendered. Statements should be rendered monthly." For an ordinary office prescription the fee is fixed at from \$1 to \$5. Other fees range from \$2 to \$5000. The last is the maximum for an operation for the removal of stone from the bladder. Three thousand dollars is the maximum fee for Cesarean section, ovariectomy, celiotomy, hysterectomy, abdominal and vaginal hysterorrhaphy, and amputation of the hip-joint. We fail to find any reference to discounts, allowances, or rebates of any kind, and to the consideration of cases that should receive gratuitous treatment. The abuse of the privileges extended by hospitals and dispensaries should also have deserved attention. We fear that there are inherent difficulties in the adoption of a fixed schedule of charges by physicians for professional services. We must look to the schools to send out only good men.

Medical Legislation in Georgia.—Georgia is one of the progressively diminishing number of States in which practically no restrictions are placed upon the practice of medicine, *i. e.*, the possession of a diploma carries with it the privilege to practise. The same struggle that has been witnessed elsewhere is now taking place in Georgia, except that the pernicious influences that are opposed to measures intended for the protection of the public and the elevation of the standard of medical education have, by their exclusion from neighboring States, here concentrated themselves. A bill has been passed by the Georgia Senate for the establishment of a "mixed" board of medical examiners, but by the united efforts of homeopaths, eclectics, and renegade physicians action by the House has been postponed until autumn. The struggle may be a long and wearying one, but there can be but one outcome. We desire to extend the heartiest encouragement to the earnest workers in a worthy cause.

Sanitation in Roumania.—A system of sanitation has been submitted to the Roumanian Senate, according to which notification, disinfection, and isolation are made compulsory in the case of cholera, variola, diphtheria, croup, typhus fever, enteric fever, scarlatina, morbilli,

pertussis, puerperal fever, and granular conjunctivitis, as well as the following diseases transmissible from animals to man: glanders, anthrax, and rabies. Revaccination is made compulsory, and vaccination and revaccination must be practised with animal lymph. Special provision is made for the repression of pellagra, malaria, and syphilis—diseases that are extremely common in Roumania. In the case of unhealthy houses power is given to prefects and mayors to construct latrines and drains at the expense of the owners, or if the defects are irremediable, to close these houses. Mayors are made responsible for the purity of the water-supply in their respective communes.

An Anglo-American Hospital at Rio Janeiro has recently been opened, which, when all of the arrangements are complete, will contain thirty-five beds. The enterprise has been furthered by the resident English and Americans, at a cost of \$210,000. Special attention has been paid to the sanitary arrangements. The water-closets are all outside of the building proper; and the drainage has been relaid. A steam disinfectant and laundry are contained in a detached building, and an English matron and two nurses were ready to go on duty as soon as the hospital was opened.

Ophthalmia Among Hop-pickers.—A special form of ophthalmia of acute character has been observed in England among hop-pickers. Women and children appear to be especially susceptible; men enjoy apparent immunity. The former are the more intimately engaged in the actual handling of the hop-cones. Hypopyon and keratitis may occur as complications, and vision may be greatly interfered with as a result of changes in the cornea.

SELECTIONS.

ONE KIND OF HOMEOPATHY.

A LARGE gathering of people of the higher classes of St. Petersburg, on April 5th, assembled to hear a public debate between champions of homeopathy and of orthodox medicine. In the Russian capital, as elsewhere, the upper classes have a natural leaning toward heresy in medicine, and at the commencement of the discussion their sympathies were almost entirely with the disciples of Hahnemann. The "allopathic" side of the question was upheld, not by a medical man, but by Professor Goldstein, a pharmacist, against whom, therefore, no allegations of professional jealousy could be made. Homeopathy was defended by Dr. Brasal, the leader of the sect in St. Petersburg. Professor Goldstein's criticisms of his adversary's statements made a profound impression on the audience. He pointed out, amongst other things, that "the caustic" remedy popular with the homeopaths is nothing but common water. The most careful scientific analysis failed to reveal anything else in it. People usually drink water by tumblers, and the homeopaths treat them with single drops of it. Besides water, Professor Goldstein went on to say, the chief remedies of the homeopaths are grains of salt, carbon, and silica, and minute quantities of pounded sugar and spirits. Mr. Goldstein thoroughly exposed the absurdity of the well-known theory of the "dynamic

power," and miraculous effect upon the system of indefinitely minute quantities, which divide the fundamental and small unit into units to the number of thirty figures. This proportion he illustrated by the following example: Take a few pinches of salt and throw it into the middle of the Sea of Ladoga, and then travel to St. Petersburg and take a tumbler of water from the Neva, which draws its waters from that sea, and then you will drink a homeopathic medicine. Homeopathy can only claim one merit, and that is a relative one—in prescribing, after long reflection and profound calculation, a few drops of water, it in no way interferes with the course of Nature.—*British Medical Journal*, No. 1689, p. 1026.

THE INEXORABLE FACTS OF HEREDITY.

"I HAVE drunk whiskey every day for thirty-five years," remarked a gentleman of sixty, rather proudly, "and I don't see but I have as good a constitution as the average man of my age; I never was drunk in my life." He was telling the truth, but to learn the whole truth you would have to study his children. The oldest, a young lady, had perfect health; the second, a young man, was of a remarkably nervous and excitable temperament, as different from his phlegmatic father as possible; the third, a young lady of seventeen, was epileptic and always had very poor health. Did the father's whiskey-drinking have anything to do with these facts? The instance may be duplicated in almost every community. Think over the families of your acquaintance in which the father has long been a moderate drinker, and observe the facts as to the health of the children. The superintendent of a hospital for children at Berne, Switzerland, has found by careful observation, that only 45 per cent. of those whose parents used intoxicating liquors habitually had good constitutions, while 82 per cent. of the children of temperate parents had sound bodies. Of the children of inebriates, only 6 per cent. were healthy. Can any man "drink and take the consequences," or must his children take the consequences? —*The Quarterly Journal of Inebriety*, April, 1893.

SPECIAL ARTICLE.

PRECAUTIONS AGAINST CHOLERA ASIATICA IN BOSTON.

By J. H. McCOLLUM, M.D.,
BOSTON.

THE purity of the water-supply and the sanitary condition of a city have such an important bearing on an outbreak of cholera that, in order to fully appreciate the precautions taken in any locality, it is necessary to take a glance at the condition of the water-supply for a series of years, and also to analyze mortuary statistics for a corresponding period. It is generally admitted that the degree of infectiousness of cholera is about the same as that of typhoid fever, and that both diseases are contracted through infected water and polluted food. If cholera gains entrance into a city, all sanitary rules and regulations, all attempts at the isolation of patients are useless if the purification of the water-supply is neglected. The history of the late epidemic of cholera in Hamburg and the almost entire freedom of Altona from the disease are the

very best arguments in support of this statement. As is well known, the river Elbe supplies each of these cities. Hamburg did not filter the water; Altona, which is below Hamburg, did do so—hence the difference between the two cities in the amount of disease. It is of interest to note that for a series of years typhoid fever has been much more prevalent in Hamburg than in Altona, a fact that aptly illustrates the parallelism of the two diseases so far as the method of communication is concerned.

In Boston, previously to the introduction of Cochituate water, the death-rate from typhoid fever was very high, being 17.4 per 10,000 of the living, but as soon as the use of this water became general the death-rate commenced to decline until, during the year 1892, the low figure of 2.9 per 10,000 was reached, a rate that compares very favorably with that of London.

Boston has been visited by cholera three times. The first epidemic, of which there is a very full account in print, occurred in 1849. The number of deaths was 601. It is very significant that the majority of cases occurred in houses where wells were used. The second epidemic appeared in 1854. The number of deaths in this epidemic was about one-third as great as in the first epidemic, which may be explained by the fact that the use of Cochituate water had become much more general. The third epidemic, in 1869, was so slight that very little notice was taken of it either in the medical journals or by the daily press. In this last epidemic there were thirty-seven cases and eighteen deaths.

Boston has an area of 37.04 square miles, and an average population to the acre of about twenty. But these figures do not give any idea of the actual condition of the population so far as crowding is concerned, for in some sections there are 213 persons to the acre, and in others there are only three. If cholera should visit Boston, it would naturally be found in the more crowded sections, and it is to these districts that the attention of the municipal authorities is more particularly directed.

The principal portion of the city is well drained by a large intercepting sewer which conveys all sewage to the settling-basins, where it is discharged at the turn of the tide and washed out to sea. Only a few small sewers discharge directly into the harbor, so that the chance of contamination from this source is very slight.

The Charles River, which flows along the northern border of the city, receives the sewage from Cambridge and a few other cities, and is much polluted. During the summer months this stream becomes a source of annoyance, but as its water is not used for domestic purposes, the danger of cholera spreading from this point is very slight.

During the past few months particular attention has been paid to the cleaning of alleyways and passages between parallel streets. The tenement houses, and more particularly the cheap lodging-houses, are frequently inspected by officers from the Board of Health, and although the condition of these places at the present time is not all that could be desired, from a sanitary point of view, yet their condition has been very much improved during the past few years, and more particularly during the past few months.

The number of privy-vaults in Boston is comparatively

slight, and their number diminishes each year. These vaults are under the constant supervision of the Board of Health, are disinfected whenever they become a nuisance, and are emptied by the odorless excavating company. The work is done by contract, and five dollars is charged for every load of eighty cubic feet.

The catch-basins in the streets and the areas about the markets are disinfected by the Board of Health as often as circumstances may require.

Of course, it is of prime importance to prevent the importation of the first cases of cholera, and in order to prevent this new and stringent quarantine-regulations have been adopted. As is the custom in all countries, no vessel can pass quarantine before sunrise or after sunset. The quarantine station of Boston is seven miles below the city at Gallop's Island, which has an area of about twenty-five acres. On this island are a hospital capable of accommodating about fifty patients; two houses of detention which will hold about two hundred and fifty people; a bathing-house containing twenty-eight bath-tubs, each tub being in a separate room and supplied with hot and cold water. Adjoining the bath-house is a steam disinfecting plant, so that the clothing of the immigrants can be disinfected while they are bathing. A truck containing twenty-eight cages runs through the center of the bath-house and is so arranged that each person, without exposure, can place his wearing apparel in a cage, the number of which corresponds to the number of the bath-room. Then the truck is run directly into the disinfecting cylinder, and the process of disinfection by super-heated steam is completed by the time the bath is finished. The disinfecting cylinder is twenty feet long and six feet in diameter, is capable of standing a pressure of forty pounds to the square inch, and is supplied by steam from the quarantine-steamer. On this cylinder an ingenious device, which has proved of great advantage in increasing the penetrating power of steam, is in use. This device consists of the adaptation of the principle of the inspirator, reversed, so that the air is drawn out from the interior of the cylinder. By the use of this apparatus the air is removed from the interior of the cylinder, and then the steam is turned on until a pressure of about twenty pounds is reached, giving a temperature of 250° Fahr., which is sufficient to kill any of the germs of disease. All immigrants from infected ports are required to bathe and to have their baggage disinfected before the vessel leaves quarantine. All suspicious cases are removed to the hospital. Each immigrant is vaccinated, unless he can give satisfactory evidence to the quarantine-physician of having been vaccinated within five years. In many instances the ship's surgeon does the vaccinating on the passage out, and gives a certificate to that effect.

In addition to the quarantine-station itself, an arrangement has been made with one of the city departments for the occupancy, in case of an outbreak of cholera, of one of the adjoining islands, with buildings sufficient to comfortably house five hundred or six hundred people. This island would be ready for use in twenty-four hours, so that in case of a cholera-infected ship arriving at this port, a portion of the passengers could be accommodated at this island, and the remainder at Gallop's Island, so far removed from those actually ill with cholera that there would be no danger of infection. In short, at the

quarantine-station in twenty-four hours a thousand well persons could be comfortably housed and removed from all source of infection, and fifty patients could be treated in the hospital. These islands are supplied with Cochituate water and are in direct telephonic communication with the Board of Health.

In the city proper a hospital capable of accommodating fifty patients has been erected. The building is heated by steam and lighted by gas; particular attention has been paid to the ventilation and also to the drainage. By means of a specially devised pot-trap all the drainage from the hospital can be thoroughly disinfected before it enters the sewer. Adjoining the hospital, but entirely distinct from it, is the steam disinfecting-station, which it is intended to use not only for the disinfection of the clothing of cholera-patients, but also for the disinfection of bedding and clothing in cases of other contagious and infectious diseases. The apparatus for disinfection is an iron cylinder twenty feet long, seven feet in diameter, with a capacity of about 692 cubic feet, fitted with the necessary steam-pipes, gauges, and valves. The outer shell is made of steel five-eighths of an inch thick; the inner shell is of galvanized iron one-eighth of an inch in thickness; a coil of perforated steam-pipes is placed at the top of the cylinder; the coil at the bottom is not perforated. The cars, in which the articles to be disinfected are placed, run on tracks into the cylinder, entering at one end and being removed at the other. There is no communication between the chamber in which the infected articles are received and that from which the disinfected articles are removed. The boiler-house and disinfecting apparatus occupy about three-fourths of the building.

In addition to the hospital just described, one of the ferry-boats could, at short notice—as was done last September—be transformed into a floating hospital capable of accommodating thirty patients. Besides, there are a number of portable houses under the charge of the Board of Health that could in twenty-four hours be made available for hospital-purposes.

It is unnecessary to give a detailed description of all the minor arrangements which a possible outbreak of cholera may demand. It is sufficient to say that the gravity of the situation is fully appreciated by the authorities, and that the whole sanitary force of the city would be immediately and effectively employed in an attempt to stamp out an epidemic of the disease.

From this brief *résumé* of the precautions taken against cholera in Boston, it is evident that the quarantine-department is prepared for any reasonable emergency; that hospitals are established within the city limits sufficient to treat all cases of cholera that would be likely to occur; that tenement houses and lodging-houses in which the disease may lurk are under careful supervision; and that careful attention is paid to the removal of filth from all parts of the city. So far as the water-supply of the city is concerned, the chances of its pollution, owing to the stringent regulations of the water board, are reduced to a minimum.

While it is possible that cholera may visit Boston, yet its advent would not find the city unable to cope with it, and there is no reason to fear that there would be a general or widespread epidemic of the disease in this locality.

SOCIETY PROCEEDINGS.

THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

*Fifteenth Annual Congress, held in New York City,
May 22, 23, and 24, 1893.*

FIRST DAY—MAY 22D.

DR. MORRIS J. ASCH delivered the President's Address, reviewing the work of the Association since its formation, in 1879, and referring to the vast strides that have of late years been made in laryngology.

DR. W. PÉVRE PORCHER, of Charleston, reported "A Case of Complete Glottic Spasm in an Adult, followed by Unconsciousness and Prolonged Drowsiness." The patient was an unmarried female, fifty-two years old, at the menopause, who complained of difficult respiration at night, with frequent, terrifying nightmares, which she attributed to an attack of influenza several months before. She would be awakened by a fit of coughing, accompanied by a feeling of choking or gagging. The tonsils were found to be small and were thoroughly cauterized with the galvano-caustic knife. On the following morning, on attempting to drink some coffee, which was not hot, the woman was seized with giddiness and became unconscious. The attack lasted but a short time. Persistent drowsiness, lasting several weeks, followed the attack, indicating marked implication of the brain-centers. The patient made a good recovery, and there has been no recurrence. On account of the known tendency of hot coffee to enter the larynx, and in the absence of any other exciting cause, the case was regarded as one of laryngeal vertigo or complete glottic spasm.

DR. JONATHAN WRIGHT, of Brooklyn, narrated the history of a case of spasm of the glottis, in which the patient was brought into the hospital unconscious and tracheotomy was performed in order to save her life.

DR. J. W. GLEITSMAN, of New York, referred to a case of laryngeal vertigo produced by fits of coughing in a patient with enlargement of the lingual tonsil.

DR. W. E. CASSELBERRY, of Chicago, referred to the not uncommon cases of reflex spasm of the glottis in children, due to irritation of the faucial tonsils, the nasopharynx or the nasal mucous membrane, and associated with acute laryngitis. In another class of cases the spasm of the glottis is associated with epilepsy, or *petit mal*, and then again there are cases of true laryngeal vertigo. In treating these cases it is most important to restore the mucous membrane of the upper air-passages to a thoroughly healthy condition.

DR. S. W. LANGMAID, of Boston, said that laryngeal vertigo is often due to digestive disturbance. Gouty individuals are particularly subject to it. The diathesis of such patients should be always carefully looked into.

DR. J. O. ROE, of Rochester, said that some cases of laryngeal vertigo are due to direct irritation of the larynx. In one case that has been described it was caused by extreme sensitiveness of the arytenoids.

DR. D. BRYSON DELAVAN, of New York, read a paper entitled "The Withholding of Statistics in Operations for the Relief of Cancer of the Throat," urging that painstaking and accurate accounts should be published of the

history of every malignant growth removed from the upper air-passages, whether the operation be successful or otherwise, so that more reliable data can thus be obtained.

DR. J. SOLIS-COHEN, of Philadelphia, said that there are various reasons that prevent the publication of accurate statistics of operations. Many operations are performed in the hospital, and the surgeon does not take time to record them. Then, again, a case may terminate fatally on account of neglect in the after-treatment; this happens not infrequently, and such cases impair the value of statistics. As a man gets older, he loses confidence in statistics, to a large extent, and depends more on his own experience and the results of his own work. He becomes more careful in the selection of his cases, and seems to know or feel that in certain cases the results will or will not prove successful.

DR. W. E. CASSELBERRY, of Chicago, read a paper on "Arthritis Deformans of the Larynx." He detailed the history of a woman, fifty-eight years old, who suffered from laryngeal dyspnea, marked inspiratory stridor, and some laryngitis. The vocal bands could not be abducted on account of an ankylosis of the arytenoid eminences. The patient had a general arthritis deformans, affecting the joints of the hands and feet, as well as the larger joints throughout the body. The attacks of laryngeal dyspnea were self-limited and corresponded with the exacerbations of the constitutional disease. During the course of the attack local treatment was employed to keep the larynx free from mucus; otherwise the operation of tracheotomy could not have been avoided. Dr. Casselberry expressed himself in accord with the theory that arthritis deformans is a disease quite distinct from rheumatism, on the one hand, and gout, on the other hand, and that its laryngeal complications are entitled to a separate discussion. In the case reported, the patient had been treated for a time on the supposition that her disease might be rheumatism or gout, but without any good effect.

DR. R. P. LINCOLN, of New York, read a paper entitled "Recurrence at a New Site of a Laryngeal Growth (Papilloma) in a Case Already Reported under the Title 'Evulsion of a Laryngeal Tumor which Returned Twenty-two Years after its Removal by Laryngotomy.'" The case was that of a woman who, in 1862, had a papilloma removed from her larynx by means of the forceps. The growth recurred, and in 1867 was again thoroughly removed, this time by laryngotomy. There was then no recurrence for twenty-two years. In 1889 a tumor was found springing from the posterior third of the right vocal band. This was removed and its site thoroughly cauterized with the electro-cautery. The growth proved to be an ordinary papilloma. The patient remained free from hoarseness until within six months, when a new growth was discovered springing from the anterior portion of the left vocal band. This was removed and also proved to be a simple papilloma.

DR. J. SOLIS-COHEN said that while the recurrence of papillomatous growths is rare, he has seen some remarkable instances of it. In one patient under his care, a school-teacher, who had a number of small sessile papillomata, a new growth could actually be seen springing from the left vocal band while he was removing the older ones. In the majority of cases in which recurrence takes

place, this is probably due to incomplete removal of the original growth. Small portions of the growth are easily overlooked. As regards the method of operation, a skilful laryngologist is just as competent to remove the growth thoroughly by the intra-laryngeal route as the surgeon is by the external method.

DR. F. I. KNIGHT said that when the growth is removed with the forceps or loop, more or less of it is necessarily left behind in the majority of cases, and it would seem strange that recurrence is not more frequent. When the growths are multiple, recurrence may be expected.

DR. DELAVAN referred to the difficulty of diagnosis in cases of apparent papilloma. The superficial appearance of the growth may be deceptive. The tendency to repeated recurrence should always suggest the possibility that the lesion is a more serious one than a simple papilloma.

DR. GEORGE M. LEFFERTS, of New York, read a paper on "Intubation in the Adult." He pointed out that intubation in the adult has of recent years been employed for intra-laryngeal conditions that were unheard of in connection with the operation in the past, and their number is rapidly increasing. The subject is still in its infancy, and ample and reliable statistics are yet wanting upon which to formulate definite propositions. The objects for which the operation is undertaken are: 1st, to overcome the most urgent acute symptoms of obstructed laryngeal respiration; 2d, to restore as far as may be possible, the interior of the stenotic larynx to its normal caliber; 3d, to obviate the necessity of resorting to either laryngotomy or tracheotomy; and, finally, to facilitate the withdrawal of the tracheal canula in certain cases in which this is attended with difficulty. Among the suitable or probably suitable conditions of the adult larynx that may demand intubation are the following: Acute or chronic syphilitic affections of the larynx; dyspnea dependent upon acute bilateral abductor paralysis of constitutional origin; dyspnea dependent upon abductive immobility of the vocal bands, due to ankylosis of the arytenoid articulations; fracture and displacement of the laryngeal cartilages from direct injury; acute dyspnea due to edematous infiltration or to the development of hematomata, usually of the aryteno-epiglottic fold; chronic stenosis; compression of the larynx or upper trachea by external causes. Intubation has been successfully performed for the relief of dyspnea dependent upon chronic edema in laryngeal tuberculosis; in acute inflammatory conditions of the adult larynx and their results; in acute perichondritis, especially of the cricoid; in spasm of the glottis; in chronic laryngitis with hypertrophic changes; in atresia of the larynx; to aid in the removal of foreign bodies or laryngeal neoplasms; in cicatricial conditions, etc.

DR. SIMPSON said that in adults the tube is best introduced with the aid of the mirror. The parts can first be sprayed with cocaine.

SECOND DAY—MAY 23D.

DR. J. C. MULHALL, of St. Louis, read a paper entitled "Rhinitis Edematosa; Laryngitis Hiemalis." The condition described consists in a serous infiltration of the connective tissue overlying the inferior or middle turbinated bone. It is intermittent in character, and may

be general or local. In one case the condition resembled a cyst, causing intense pain, lachrymation, and a flow of thin serum. The swelling obstructs the nasal respiration; it may be migratory in character. It may be acute or chronic. When the swelling is punctured with the bistoury serum slowly exudes. Cocaine has little or no influence in causing the mass to shrink. The condition may occur in connection with bronchial asthma, but in the majority of cases asthma is absent. The affection is certainly a neurosis, yet it stands apart from those morbid conditions that are caused by an extrinsic excitant, as is rose-cold, etc. In most cases there is a history of hepatic derangement, and the disease is probably of biliary origin. As regards treatment, spraying, etc., is contra-indicated. Scarification may be of benefit. In chronic cases, existing deformities of the nose should be corrected. The principal efforts should be directed toward improving the condition of the alimentary canal.

Laryngitis hiemalis—winter laryngitis—is a variety of subacute laryngitis in which the secretions are rapidly changed into adhesive crusts. Cold weather is the important factor in its production. There is complete aphonia. The crusts often cling to the surfaces of the true bands and the arytenoids. The evidences of inflammation in the larynx are slight. The condition differs from laryngitis sicca. Improvement rapidly follows removal of the crusts and the use of a spray containing vaselin and eucalyptol.

DR. SAMUEL JOHNSTON, of Baltimore, reported "A Case of Nasal Polypus projecting into the Naso-pharynx, with Specimens." The patient was a man, sixty years old, who gave a history of nasal obstruction, difficulty in swallowing, and impaired voice. A non-vascular tumor was observed to protrude between the border of the soft palate and the post-pharyngeal wall. This was removed with the snare and was found to be about the size of a pullet's egg, with a smaller one adjoining, and had its attachment by a narrow pedicle to the inferior turbinated bone. One year later the symptoms reappeared and a mucous polypus was found hanging freely over the velum and almost touching the base of the tongue. This tumor measured two inches in length and three-quarters of an inch at its thickest part.

DR. J. SOLIS-COHEN, of Philadelphia, read a note on "Buccal Voice," illustrated by presentation of a patient who phonates without a larynx and without the use of his lungs. The patient was a man whose larynx had been removed fourteen months previously for epithelioma. In order to prevent the occurrence of septic pneumonia, the trachea was stitched to the skin by several silk sutures. There has since been no communication between the trachea and the mouth. Some months after the operation the man was able to make a clucking sound. He was encouraged in doing this, and has made wonderful improvement. He is now able to speak; his voice is well modulated and can be heard for a considerable distance. After the operation a slight fistula remained in the track of the wound, and in order to close this the skin was inverted and stitched together. The beard on these inverted flaps of skin has continued growing, giving a very curious appearance to the inner surface of the wound. The man wears a tracheotomy-canula, which he removes during sleep. He prefers to wear it during the day, as it gives him some support and

allows him to talk better. After the operation the man was nourished per rectum. Eighteen years ago a papilloma was removed from his larynx. Dr. Cohen expressed the opinion that the man was probably aided in speaking by the constrictor muscles of the pharynx.

DR. JOHN W. FARLOW, of Boston, reported "Two Cases of Tuberculosis of the Nose." One was that of a woman, aged twenty-three years, with tuberculous ulceration of the lower and anterior part of the left septum. Exploration of the chest was negative. Examination of the crusts from the nose failed to show any tubercle bacilli. There was no history of syphilis. The condition of the nose was typical of tuberculosis, and the ulcers healed after thorough curettement and the application of the cautery and lactic acid. The second case was in a woman seventy-one years old, who had tuberculous growths projecting from the anterior part of the right septum. There were no pulmonary symptoms. The growths were removed from the nose, and were pronounced by two pathologists to be undoubtedly tuberculous.

DR. C. C. RICE, of New York, read a paper on "The Use of Ozone in Atrophic Catarrh." He related that the results obtained during the past two months from the use of ozone in the treatment of catarrhal diseases have been satisfactory enough to warrant calling attention to the use of this remedy in atrophic catarrh. The gas possesses powerful oxidizing, germicidal, and bacteriologic properties. Applied to the nose, it causes a mild smarting of the nasal mucous membrane, lasting for several hours. The secretion of mucus is markedly increased. The milder cases of atrophic catarrh are very quickly benefited by the treatment and remain improved for several days, but most of them relapse somewhat. In the more severe cases the benefit is not obtained so quickly. Whether permanent moistening of the mucous membrane and decrease of secretions can be obtained by the use of ozone can be determined only after a longer trial.

DR. JONATHAN WRIGHT, of Brooklyn, read a paper entitled "Remarks on the Structure of Edematous Nasal Polypi," giving the results of a long series of histologic experiments, the material for which was obtained from about 150 individuals. A few of these were normal cases; the others were suffering from various pathologic conditions of the upper air-passages.

DR. J. C. MULHALL, of St. Louis, took exception to the statement that atrophic rhinitis is commonly the result of a preceding hypertrophic rhinitis. While this is the view generally held, he has long been of the opinion that, in the vast majority of cases, atrophic rhinitis is a disease commencing in childhood and often the result of an acute inflammatory process.

DR. JOHN O. ROE, of Rochester, N. Y., read a paper on "Deviations of the Nasal Septum and Their Correction." He referred to the great frequency of this form of nasal obstruction; according to different authorities, it has been found in from 37 to 96 per cent. of all cases that have come under their observation, and in two-thirds of these the deviations were confined to the cartilaginous and the anterior portion of the osseous part of the septum. Such deviations are mainly due (1) to traumatism, and (2) to defective development. The treatment may be either palliative or radical. The

former includes the adoption of proper measures to remove the exciting cause, such as turbinate hypertrophy, osseous growth of the turbinated bones, adenoid growth, and such other conditions in children as may cause nasal obstruction and interference with the proper development of the nose. Radical treatment may be divided into non-surgical and surgical. The former consists in the employment of pressure upon the convex side of the deflected septum. The latter consists in correcting the deformity by the use of the forceps after all bony spurs and ridges have been removed by the knife, gouge, etc.; by the use of the galvano-cautery, chromic acid, electrolysis, or by incision. Dr. Roe exhibited a number of forceps he has devised for the purpose of fracturing and straightening the septum. After this is accomplished the septum is held in place by a suitable dressing. The nasal cavity should first be cleansed with a 1 to 3000 mercuric-chlorid solution. The dressing should be thoroughly aseptic, and should be left undisturbed for four or five days.

DR. T. A. DEBLOIS, of Boston, read a paper on "The Cautery in Uvulotomy," recommending the galvano-cautery, in preference to the knife or scissors, in operations on the uvula. The parts are first thoroughly sprayed with cocaine; the platinum loop is then passed around the appendage, and as soon as the cautery is felt on the posterior surface of the uvula it is drawn tight by the palatine muscles, and by pulling in an opposite direction with a pair of forceps, the cut can be nicely bevelled; when the wound heals it leaves a well "tapered" stump. There is no hemorrhage, and the after-pain is not so severe as when the uvula is clipped off with the knife or scissors.

DR. CLINTON WAGNER, of New York, read a paper entitled "Salivary Calculi, with Reports of Cases." He stated that salivary calculi are formed by the deposit of earthy salts (chiefly calcium phosphate) from the saliva in the excretory ducts leading from the gland, or in the body of the gland itself. The cause of the deposit is an obstruction to the flow of saliva either to or through the excretory duct. Salivary calculi are most frequently found in the sublingual gland or its excretory duct (the duct of Bartholine) and usually appears as tumors under the tongue on one side or the other of the frenum; they are sensitive upon pressure, and occasionally fluctuating. If the body is lodged in Wharton's duct, there will be enlargement of the submaxillary gland, in addition to the sublingual tumor. The concretions are sometimes found in Steno's duct, in which case there will be enlargement of the parotid gland. The subjective symptoms are pain and difficulty in mastication and deglutition, with more or less impairment of speech. The treatment consists in free incision by the knife. For purposes of diagnosis, an exploration can first be made through a small opening by means of a probe.

Dr. Wagner detailed the histories of four cases of salivary calculi; in one the calculus weighed 93½ grains the largest on record.

THIRD DAY—MAY 24TH.

DR. HARRISON ALLEN, of Philadelphia, made some remarks on "Congenital Defects of the Face, with Exhibition of a Rare Form of Cleft Palate." He exhibited the skull of a Seminole Indian, illustrating a rare form

of cleft palate, the cleft being directly in the median line. The ordinary form of cleft palate results from the failure of the fronto-nasal process to descend to a level with the sides of the face at the time when these are being developed from right to left. A fissure is thus left on one or both sides of the face, as in the ordinary form of cleft palate. Among other abnormalities presented by the skull was a spur of bone, exercising direct pressure on the turbinated bodies on the left side. Dr. Allen expressed the opinion that many cases of nasal headache, catarrh, etc., are due to pressure-effects of congenital origin, and that deviations of the nasal septum are also in the large majority of cases due to congenital causes, and not to traumatism, as is generally believed.

DR. J. H. BRYAN, of Washington, D. C., read a paper entitled "On Some of the Manifestations of Syphilis of the Upper Air-passages," reporting three cases of syphilitic disease of the throat. One was a case of stenosis of the larynx occurring in a woman who had acquired syphilis through her husband. The second was a case of syphilitic tonsillitis undergoing suppuration, although the patient denied a specific history. The third was a case of congenital syphilis of the pharynx and larynx. The patient was a girl, aged twelve years, who also had an interstitial keratitis in both eyes, and suffered from deafness; the notched teeth were absent.

DR. MULHALL suggested that in the second case narrated, the suppuration of the tonsil might have been coincident with the syphilis, but independent of it. Dr. Mulhall said he was associated with Mr. Hutchinson for a number of years as his assistant, and saw many cases of hereditary syphilis in which the teeth were not notched. On account of their more defective nutrition, hereditary syphilis produces in English children much greater ravages than in children in this country.

A paper on "An Improved Method of Draining the Antrum of Highmore," by DR. GEORGE W. MAJOR, of Montreal, was read by title.

DR. JOHN N. MACKENZIE, of Baltimore, read a paper on "Aspergillus-mycosis of the Antrum Maxillare." He reported the case of a patient who for a long time had suffered from antral disease, with the occasional passage of a false membrane from the antrum. Some of the membrane was examined microscopically, and was found to consist of a number of layers, one of which was covered with a mass of *aspergilli*—probably *aspergilli fumigati*.

DR. W. K. SIMPSON, of New York, reported "A Case of Sarcoma of the Soft Palate, Illustrating the Degeneration of a Benign (Papilloma) into a Malignant Growth; Removal of the Soft Palate; Death." The patient was a girl, who, at sixteen years of age, had multiple papillomata of the soft palate, which were removed. Sixteen months afterward there was a recurrence of the growths. They were removed with the galvano-cautery knife. After this a number of recurrences rapidly took place, and a microscopic examination of the growth showed it to be sarcomatous. The patient complained of no pain; there was some difficulty in swallowing and slight thickness of speech. The cervical glands were not enlarged. In August, 1890, the entire soft palate was removed under cocaine, one dram of a 4 per cent. solution of the drug being employed by spray and subcutaneously, without ill-effects following. Two months after this

operation signs of recurrence were noticed; the growth rapidly extended to the naso-pharynx, and the patient died of inanition in April, 1891, two years and three months after the appearance of the apparently benign papilloma, and eight months after the final operation.

DR. ROALDES cautioned against placing too much faith in the report of the microscopist. Six years ago he removed a fibroid tonsil from a member of his own family. He submitted sections to a number of pathologists, both in this country and abroad, and all pronounced it round-celled sarcoma. The case has been carefully watched, and there have been no signs of recurrence. If the advice of the pathologists had at once been acted on, and an operation performed, the case would have been included among the successful cases of operation for sarcoma.

DR. BEVERLEY ROBINSON, of New York, opened the discussion upon "Diphtheria: Its Prophylaxis and Treatment." He confined himself chiefly to the causation of the disease and the methods of isolation and disinfection. In order to stop its development, proper attention must be given to house sewage; closets, cellars, etc., must be kept clean and well ventilated. When the disease actually occurs, complete isolation should be insisted on. In doubtful cases the exudate from the throat should at once be submitted to bacteriologic examination. No one should be allowed access to the patient, excepting the physician and the nurse. Perfect isolation can only be obtained in suitable hospitals especially erected for the reception of patients suffering from contagious diseases. Proper attention should be given to the ventilation of the sick-room, the disinfection of the discharges, etc. In case of death, public funerals should be forbidden. Strict rules should be enforced for the protection of schools. The bacilli of diphtheria may be found in the pharynx as long as five weeks after the disappearance of the membrane. The physician in attendance upon the case should at every visit be provided with a gown and hood, which can be disinfected on his departure. The room, bedding, etc., should be thoroughly disinfected. Among the most satisfactory disinfecting agents to be used in these cases are eucalyptus, turpentine, carbolic acid, creasote, and tar.

DR. ROBINSON stated that despite the advances made in the bacteriologic investigations of diphtheria, the treatment is still uncertain and unsatisfactory. As regards the internal treatment, many drugs have been advocated. Mercuric chlorid has been highly praised by some, while others have seen no especially good results follow its use. In the Friedrichshain Hospital at Berlin no internal treatment at all was employed, and yet there was 64 per cent. of cures. At the Willard Parker Hospital the only constitutional treatment employed at present is to give alcoholic stimulants throughout the course of the disease to those showing any tendency to heart-failure. As regards local treatment, sprays, irrigations, or gargles can be employed, in accordance with the age and strength of the patient. Dr. Robinson stated that in his experience it is more useful and satisfactory to disinfect and cleanse the throat by means of sprays employed not directly through the mouth, but indirectly through the nose. In this manner the medicated solution is brought into more complete contact with nearly every portion of the diseased membrane

than in any other way, and with less distress and fatigue to the sick child. The nasal sprays should be rather coarse, never too strong, and repeated every hour or two, depending on the malignancy of the case. For spraying purposes, mild solutions of carbolic acid, with lime-water, borax, or sodium bicarbonate, can be used, or very mild solutions of mercuric chlorid. The solutions of carbolic acid should not be stronger than 1 or 2 per cent: those of mercuric chlorid, 1 to 4000, 1 to 8000, or 1 to 10,000. As regards the value of carbolic acid in this disease there is a difference of opinion; by some it is considered to be useless and even harmful. From time to time the fauces and tonsils and pharynx should be given a thorough cleansing with the same spray or by means of a syringe. Local applications with a swab or brush can also be made with mercuric solutions, 1 to 500, or even 1 to 250. Tincture of ferric chlorid in glycerin and water, or a tablet of mercuric chlorid in solution in water or milk can be given, followed by liquid food and alcoholic stimulants. Vapors of turpentine, carbolic acid, and eucalyptus should be used more or less constantly in the room.

DR. MULHALL referred to the value of "house posting." Personal prophylaxis is of the greatest importance in this as in other contagious diseases. The general condition of children should be looked after; enlarged tonsils and other morbid conditions should be rectified. Dr. Mulhall has found the best method of treatment to consist in sterilizing the upper air-passages and keeping up the nutrition of the patient. The sterilization of the nose and throat can be done with very little discomfort to the patient by means of the common household syringe. It is important to disinfect the posterior nares, as the absorption of toxic matters in that region is very rapid. This can be done by means of a little glass syringe.

The further discussion of this question was postponed until the next meeting of the Association.

The following officers were elected for the ensuing year:

President—Dr. D. Bryson Delavan, of New York.

Vice-Presidents—Dr. J. C. Mulhall, of St. Louis; Dr. W. E. Casselberry, of Chicago.

Secretary and Treasurer—Dr. Charles H. Knight, of New York.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

Tenth Annual Meeting, held at Philadelphia, May 25, 26, and 27, 1893.

FIRST DAY—MAY 25TH.

DR. R. G. CURTIN, of Philadelphia, delivered the "President's Address." He extended a cordial welcome and reviewed the history of the Association. He pointed out the value of the material added to the literature of climatology, and referred to the recent deaths of members. He made the following suggestions: that the discussions be reported by a competent stenographer; that a Committee on Health-Resorts be appointed, to collect data and report yearly to the Society as to elevation, meteorology, etc.; that a Committee on Mineral Springs be appointed, to collect information as to the composition of waters and their medicinal uses; that the Associa-

tion take up for consideration important national questions, such as a rigid quarantine to bar out epidemics, the preservation of forests, a national leper colony; that the standard of membership be raised and a limit placed to the number of members; that the interest of well-known bacteriologists be enlisted in the work of the Association.

DR. R. G. CURTIN also read a paper entitled "Angina Pectoris and Morbid Anginose Symptoms Caused by Heavy Blows, Crushing Injuries, and Chronic Inflammation around the Heart." In a considerable number of cases of angina pectoris that had come under observation, there was a history of antecedent traumatism, or an association with chronic inflammatory disease around the heart. In a second group of cases there was a history of traumatism. In both, the symptoms may have been dependent upon the existence of pericardial adhesions.

In this connection it is interesting to note how common it is to find the layers of the pericardium adherent at autopsies, in cases of aneurism and organic disease of the heart associated with anginal symptoms. In those sufficiently strong to respond to treatment, the prognosis is quite good; but this should be guarded in the old, intemperate, or overworked.

In most cases nitro-glycerin relieves the symptoms, but this drug often fails because it is not given frequently enough. In a bad case it should be given every hour or two. It will ward off paroxysms, but it is not curative. The hypophosphites act as good curative agents, and should be given continuously for months. Cod-liver oil is often beneficial, especially in cases in which flesh has been lost. Arsenic is a tonic and a curative agent. Protection to the chest by added clothing, or a cotton, flannel, or woollen pad is to be recommended. In extreme cases the patient should be kept in bed for rest and protection. The diet should be restricted and work diminished. Temperance in all things should be directed.

DR. J. H. MUSSER, of Philadelphia, related the case of a patient, forty-three years old, who had a severe attack of pericarditis, and afterward, while in apparently good health, had an attack of angina pectoris. This was the beginning of an illness that resulted fatally at the end of two months from cardiac aneurism. The angina pectoris was due to thrombosis of the coronary arteries.

DR. QUIMBY detailed the case of a woman of twenty-eight or thirty, who was greatly disturbed by exercise, but who lived an easy and comfortable life for eight or ten years, sitting in bed. She had distinct adhesions from suppurative pericarditis.

DR. A. H. SMITH, of New York, expressed the opinion that a large proportion of cases of angina pectoris may be traced to a disproportion between the muscular power of the heart and the resistance to be overcome.

DR. LEONARD WEBER, of New York, pointed out the distinction between true angina and pseudo-angina. In three cases of true angina pectoris there was sclerosis of the coronary arteries consequent upon gout, syphilis, or over-exertion in athletics or severe mechanical work.

DR. F. P. HENRY, of Philadelphia, referred to a case of aortic stenosis and insufficiency, in which one or more attacks of angina occurred daily. The attacks are not brought on by exertion, nor can they be brought on

voluntarily; the patient is constantly in bed, and yet never fails to have an attack during the day. After being placed on tincture of aconite the attacks ceased, and have not recurred for eight weeks. The man is now up and going about, and practically well. On one occasion he was greatly shocked by the escape of an inmate of the ward for the detention of insane patients, who ran into the ward in which this patient was; but he had no attack, though there must have been a great disproportion between the tension of the vessels and the action of the heart.

DR. J. M. ANDERS, of Philadelphia, read a paper entitled "Seasonal Influence in Erysipelas, with Statistics." As the result of a study of 2010 cases from various hospitals, the conclusion was reached that erysipelas is, to a considerable extent, dependent upon seasonal influence. Certain climatic elements have a decisive, though perhaps slight, causative influence. Temperature has least, and mean relative humidity the most intimate connection with the disease. A low barometer and mean relative humidity invariably correspond with the period in which the number of cases is largest; and the highest relative humidity with the months with fewest attacks. Erysipelas is not, to the same extent as chorea and rheumatism, related to the seasonal variations in the totality of human illness. The mortality-rate is little, if at all, affected by seasonal influence.

DR. S. D. RISLEY, of Philadelphia, read a paper on "Ocular Disturbances Due to Climatic Influences." He pointed out the difficulty of differentiating between climatic influences and racial peculiarities, on the one hand, and the habits and peculiarities of immediate environment, on the other hand. Statistics and clinical reports of ophthalmologists in Europe and different sections of our own country show that certain forms of conjunctivitis and corneal disease are more prevalent in one part of the world than in another. In Europe, cases of trachoma are much more numerous than in Philadelphia; and in the western section of our own country a relatively large number of patients is under treatment for rebellious conjunctival disease. This is to be accounted for by the prevalence of high winds, carrying clouds of dust, by exposure to strong light in agricultural districts, or the strong snow-light in winter. The deleterious influence of the alkali plains on mucous membranes has been pointed out. This alkaline dust, doubtless, causes chronic inflammation of the conjunctiva and cornea.

Another form of ocular disturbance due to climatic influence is of malarial origin. The conjunctiva, cornea, and deeper tunics are affected. The most frequent affection is that of the cornea, which does not conform to other recognized forms of corneal disease. This is periodic in character; and recovery takes place under antiperiodic doses of quinine or arsenic. On the day of the paroxysm, the eye is much worse; and as there is ordinarily tissue-change (corneal epithelial abrasion), the eye is not well between attacks, as there is not time for repair. In one of two cases of recurring retinal hemorrhages, in which the attacks came on in multiples of seven days, the corpuscles of Laveran were found.

There are forms of rheumatic ocular disturbances that are made worse by a cold, moist climate. One case presented optic atrophy, with amblyopia that appeared to

be a result of high altitude, recovery taking place near the sea-level. The treatment included the chlorids of iron, arsenic, mercury, and strychnine internally, and a weak collyrium of eserine to be used morning and evening.

DR. T. J. MAYS, Philadelphia, read a paper entitled "The Management of the Convalescent Stage of Phthisis," in which he dwelt upon the necessity for care in the management of the convalescent period of pulmonary tuberculosis. In the active stage, according to Dr. Mays, nothing is so potent for good as protracted rest, and nothing so harmful as ill-advised exercise. Next in importance to rest is nutritious food, such as freshly expressed beef-juice, beef-powder, beef, eggs, milk, oysters, etc., and drug-medication.

After the patient has been so far restored as to be able to go to work, he must avoid becoming tired and forego all physical strain; he may become fatigued, if he is readily refreshed by rest and food; but if he tires himself so that he is constantly exhausted, there must be excessive irritation somewhere, and the body is wasting its resources too rapidly. An abundance of rich, nutritious food should be taken. Pulmonary gymnastics should be practised, so that the lungs may be fully expanded. Deep voluntary breathing in the open air, with closed mouth, should be encouraged at intervals of an hour or two throughout the day, for ten or fifteen breaths in succession at a time. The hands may be brought above the head during inspiration and gradually brought to the side in expiration. The breathing of compressed and rarefied air is the most powerful means at our command for increasing the respiratory capacity. Physical exercise within limitations is desirable during convalescence. One of the best forms is walking; but care must be taken to avoid fatigue. The selection of a suitable occupation is of importance, and is often attended with difficulty. If the previous occupation has proved injurious it must not be resumed.

DR. SMITH pointed out that in the early stages it is necessary to determine whether a lesion of nutrition is the primary condition and the pulmonary lesion secondary, or the reverse. In the case of an individual who has been engaged in a sedentary occupation and the nutritive powers have become weak and there is depression, the gain from proper exercise in improving the nutrition would be greater than the loss that might result from conservation of vitality. If, on the other hand, the pulmonary difficulty has taken precedence, then the reasoning of Dr. Mays holds good, and the forces must be conserved.

DR. OTIS, of Boston, emphasized the fact that but few individuals leading ordinary lives breathe fully and properly.

SECOND DAY—MAY 26TH.

DR. A. C. ABBOTT, of Philadelphia, read a paper entitled "Considerations Concerning Asiatic Cholera," which is to appear in a subsequent number of THE NEWS.

DR. E. O. SHAKESPEARE, of Philadelphia, read a paper on "Public Quarantine Against Cholera." He emphasized the importance of placing quarantine under the uniform direction of the central government; and not submitting it to the whims or inefficiency, or lack of

knowledge, or lack of backbone of local quarantine officers, who are especially liable to be influenced by the mercantile interests, to the detriment of the people behind the great ports.

He pointed out that this country is exposed to infection from cholera almost exclusively by the immigrant, and it is irrational for a country in which such a danger does not exist, as in England, to assume that the conditions are the same here as there.

DR. JUDSON DALAND, of Philadelphia, read a paper on "Recent Agencies Used in the Treatment of Cholera." In the way of prophylaxis, it is only necessary to prevent the swallowing of the cholera-organism. Ordinary water and uncooked or partially cooked vegetables, fruits, and salads are to be avoided. Boiled or distilled or bottled waters may be used. Scrupulous care as to personal cleanliness should be observed. Attacks of indigestion should be avoided, and all food taken should be easily digested and nourishing. If the hands have become infected with cholera-germs in any way, they may be sterilized by dipping in a 1 to 500 mercuric-chlorid solution.

In the premonitory stage the patient should be kept in bed, and be protected from cold. The food should be of the simplest character, preferably boiled milk, boiled rice, milk-toast, in small quantities, at intervals of two hours. The administration of five grains of pepsin with the food is of benefit. As acids tend to destroy the cholera-bacilli, one of these should be administered, hydrochloric acid preferably, for an adult from thirty to forty drops in a tumbler of water. Aromatic sulphuric acid has been used with success.

In the evacuant stage or stage of collapse, the best means for supplying the system with liquid is the subcutaneous injection of water containing from 6 to 10 per cent. of sodium chlorid—two small teaspoonfuls to a quart of distilled hot water (110°), to which two ounces of brandy may be added. A small aspirating needle and canula, attached to the rubber tube of an ordinary fountain syringe, are all that is needed. The best point of introduction is in the flank between the ribs and the crest of the ilium. The apparatus should be sterilized, and all antiseptic precautions taken. The first injection in an adult should be two quarts. Intestinal disinfectants should be used. A 2 per cent. solution of tannic acid should be slowly introduced into the rectum, using a rubber tube, one-quarter inch in diameter, having one outlet one-half inch from the extremity, and another on the opposite side two inches from the extremity; the terminal portion is closed and rounded. This should be oiled, warmed, and slowly introduced into the rectum by a slight rotary motion a distance of about ten inches. This tube should be connected with an ordinary fountain syringe. Heat may be supplied by means of the hot plunge-bath, repeated as often as desirable; and hot air may be conducted beneath the bed-clothing; hot-water bags, hot-sand bags, hot bricks, may be used; or a water bed may be filled with hot water.

The best method of administering stimulants is by deep hypodermic injection, which may be repeated as often as indicated.

As the stomach often contains choleraic liquid, it is advisable to thoroughly irrigate this viscus with hot tannic-acid solution. Peptonized milk, two ounces every

two hours, may be used. If not well received, it may be surcharged with carbonic-acid gas, or koumyss may be substituted. Iced champagne or carbonated distilled water may be given.

If intense pain and muscular cramp be present, morphine, gr. $\frac{1}{8}$, atropine, gr. $\frac{1}{100}$, may be injected into the muscles.

In the stage of reaction, the quantity of liquid food and liquid may be increased; the hydrochloric acid should be continued. If suppression of urine persists, hypodermatoclysis may be continued at intervals of eight hours. To facilitate digestion, five grains of pepsin should be administered with the hydrochloric acid. In favorable, uncomplicated cases the amount of nourishment should be gradually increased, passing from liquid to more solid food, bread saturated with milk, junket, poached white of egg, etc., and returning to ordinary food. If the typhoid state remains, hypodermatoclysis should be repeated once or twice daily; and strychnine, gr. $\frac{1}{8}$, and quinine, 3 grains, may be given every four hours, with hydrochloric acid and pepsin.

DR. J. H. MUSSER, of Philadelphia, presented a communication entitled "Notes on Tuberculous Pleurisy." He pointed out that the diagnosis is based upon the prolonged impairment of health in a person usually past thirty, in conjunction with the physical signs of thickening of the pleura. The sputum is usually mucous or muco-purulent, and contains no tubercle-bacilli early. There is no advanced lung-destruction. Cough and dyspnea are present out of proportion to the physical signs. Palpation and inspection, in addition to percussion and auscultation, are important means of diagnosis.

The prognosis is comparatively good; the patients usually recover, though they may never regain full strength and weight.

There is no specific treatment. Of importance are the general management, the diet, and remedies for the gastro-intestinal catarrh, together with proper respiratory gymnastics. During a certain period of the day it is well for the patient to stay in bed. Opium may be indicated in small, stimulating doses.

DR. JOHN W. BRANNAN, of New York, read a paper on "Phlegmonous Angina and Its Treatment by Early Incision." He stated that until recently this condition was included in tonsillitis, although in four-fifths of the cases the abscess forms outside of the gland.

Quinsy is not a rare disease, and is usually first seen by the family physician. A severe case is never a light matter to the patient, though the prognosis is usually favorable; in most cases pus forms, and the patient is miserable until this is evacuated. Some oppose instrumental interference, but it is the general practice to let out the pus as soon as its situation can be determined. This is followed by immediate relief. Scarification is of no benefit, and usually aggravates the condition.

In the great majority of cases the abscess opens in the soft palate. The puncture is made through the anterior pillar of the fauces, with good illumination. It is important to relieve the tension of the parts, even if suppuration has not taken place. Unless there are signs of pointing elsewhere, the incision should be made through the soft palate directly backward. If ordinary surgical care is exercised there is no danger of wounding the internal

carotid artery. In cases of deep-seated inflammation, in which the pus comes slowly to the surface, erosion of the arteries in the neighborhood may take place; and the surgeon must be prepared to deal with arterial hemorrhage at the moment the abscess discharges into the pharynx.

DR. CARL VON RUCK, of Asheville, read a paper entitled "A Contribution to the Results of Treatment of Pulmonary Tuberculosis by Professor Koch's Method." He detailed the further progress of twenty-five cases of pulmonary tuberculosis treated with tuberculin, and reported two years previously. In the five cases treated in the early stage recovery has taken place and no relapse has occurred.

Of seven more advanced cases final recovery took place in six; relapse in one, followed, however, by improvement.

Of thirteen far-advanced cases, death took place in seven; six are still alive, three continuing greatly improved, and three others remain improved.

It is not possible to mathematically demonstrate the share attributable to the treatment with tuberculin, but it must be admitted that these results are better than have been obtained by any other mode or combination of treatment.

The proper selection of cases is important. No patient is suitable for treatment with tuberculin who presents symptoms of acute inflammatory changes in the tuberculous areas or of septic infection. The treatment should be carried out in a special institution, where alone control and oversight are possible. Physical examination of the chest must precede and follow the administration of every dose, and the result be recorded. The distinction between local and general reaction must be clearly understood. The latter is to be avoided. The dose should not be repeated for twenty-four hours after the effects of the previous dose have subsided.

The initial dose may be $\frac{1}{10}$ milligram, and may be gradually increased by tenths of a milligram up to 1 milligram. Then the increase is by fifths up to 2 milligrams; then by halves up to 10; by doses of $2\frac{1}{2}$ up to 20; and thereafter by doses of 5 milligrams at a time. When a point is reached where the improvement is radical the remedy is withdrawn for from two weeks to a month. If there is no relapse the patient is simply kept under observation, but if there is a relapse a repetition of the treatment is necessary.

Tuberculin must not be considered a cure-all, or as a remedy indicated under all conditions of the disease, but as of great value when used properly. Its effects are as uniform as could be expected under the great variety of individual conditions present, such as constitution, stage of the disease, organs involved, and complications.

DR. I. H. HANCE, of Saranac Lake, N. Y., read a paper entitled "A Clinical Study of Crude Tuberculin and Modifications of the Lymph in the Adirondack Cottage Sanitarium." He reported twelve cases treated with Trudeau's modification of tuberculin. In all, the sputum contained tubercle-bacilli. In four of the cases the process was incipient; in five, advanced; and in three, far advanced. Three of the incipient cases were cured and no relapse has occurred, now after eighteen months. One has returned to the Sanitarium, but the

process is confined to one lung and has assumed a more limited character than usual.

Of the advanced cases one is well (discharged eight months ago), as are three other cases discharged at later periods; the fifth has been lost sight of.

Of the far-advanced cases two were hopeless and are dead, and the third left the Sanitarium with the disease quiescent, but was suffering from gastric catarrh. Since, she has developed diarrhea and is probably dead. In all of these far-advanced cases throat-lesions were most pronounced.

It is the aim to administer the lymph so that it will not produce any reaction, as any systemic disturbance is productive of injury. Beginning with small doses, given sometimes twice a day, until tolerance has been established (which may be a matter of some weeks), it has been found that patients with very far-advanced lesions bear the lymph well.

The initial dose is from 0.001 to 0.005, and is repeated daily unless the patient reacts, as evidenced by a rise of temperature to over 100° F. in apyretic cases or above the daily average temperature in febrile cases, or by marked systemic disturbance. In any of these events the injections are omitted for a day or two, and the dose is more slowly and cautiously increased by from 0.002 to 0.005 at a time until 0.025 or 0.050 are administered. When this dose has been administered without any reaction for a couple of weeks tolerance has been established, and the injections can be given in more rapidly increasing doses. The largest dose ever administered daily without reaction was 1.8 c.c. When the lymph has been omitted for some time, subsequent treatment shows that the system is more tolerant than upon first treatment.

DR. A. H. SMITH, of New York, read a paper on "Respiratory Mechanism of Wounds in the Chest." He exhibited a mechanical device for illustrating the movements of the lung in penetrating wounds of the chest. It consisted of two bellows, operated by handles common to both, and representing the thoracic cavities, each containing an elastic bag, representing the lung. The top of each bellows was of glass. A slot, covered by a slide, represented a wound of variable dimensions, tubes representing the bronchi and trachea connecting the two bags.

With the slot wide open, and the bag on that side disconnected from its fellow, it was seen that the movements of the bellows were without effect on the bag; but when the connection was reestablished, it was evident that the bag received air from its bellows when the handle was depressed and that it collapsed when the handle was lifted, its movements being exactly the reverse of those of the bag on the other side. When the device representing the glottis was partly closed, this reverse movement was very marked. Dr. Smith observed that this action exactly resembled that seen in an animal when the thorax on one side is freely opened. On progressively lessening the size of the opening this reverse action becomes constantly less, until a point is reached where the lung (bag) remains at rest in a state of partial inflation. With a still smaller opening, the lung begins to follow the movements of the chest and becomes independent of the action of its fellow.

Dr. Smith exhibited a valvular drainage-tube for cases of operation for empyema. The valve consists simply

of an India-rubber nipple with a slit in the top; this nipple is secured to the outer extremity of the ordinary tube and forms a complete valve.

THIRD DAY—MAY 27TH.

DR. A. N. BELL, of Brooklyn, read a paper on "The Climate and Mineral Springs of North Carolina." He divided the State physically into three sections: (1) the coast and swamp land, extending from fifty to eighty miles inland, the most insalubrious; (2) the middle section, extending from the termination of the former, beginning at an altitude of about 400 feet, and extending to the foot of the mountains, where the third section begins, at an altitude of 1000 or 1500 feet, and embracing the western part of the State—the mountainous region.

The middle section is a broad undulating plain, for the most part covered with pine. The lowest points in the Black Mountains are nearly as elevated as Mount Washington, while Mount Mitchell is 400 feet higher. The table-land between the ridges is a series of well-watered, forest-covered, fruitful valleys and hills, from 2000 to 3000 feet above the level of the sea, and one of the most picturesque and salubrious sections of the United States.

The mean temperature of the middle section is about that of the spring and autumn months, 58°; in the summer it is 78°; in winter, 40°. The average annual rainfall is about 44 inches. The annual mean humidity, 65; spring, 59; summer, 66; autumn, 68; winter, 69.

The pine forest section is of exceptional healthfulness throughout the year; the mountainous section is from ten to fifteen degrees colder than the middle section, but less humid and more bracing.

The mean annual temperature of Asheville is 54.20°; the temperature rarely rising above 84° on the hottest days; the average annual rainfall being 34.21. The winter climate is remarkable for its dryness and equability. In the higher altitudes the temperature is more variable.

Mineral springs abound: Acidulated waters, calcareous waters, chalybeate waters, saline waters, hot and warm springs. These are found in the Glen Alpine Spring; Charlotte Mineral Spring; Iron Spring, in Madison County; Chatham Mineral Spring; and on the western branch of the French Broad River, in Buncombe County.

There are many others that have not been analyzed in Vance County, Murfreesborough County, and in the counties of Stanley, Stokes, Wayne, Caswell, Gaston, Beaufort, and Moore. Sulphuretted waters are found at Chapel Hill, Orange County, and in the counties of Burke, Warren, Montgomery, Caldwell, and Catawba.

DR. DARLINGTON expressed his belief that the matter of climate does not have a great deal to do with disease—certainly not with pulmonary tuberculosis. Oregon, with its great rainfall, is far healthier than the drier sections, such as California, New Mexico, and Arizona, where there is very much less rainfall. One can find as many rosy cheeks in London, where there is no sunshine, as on the Western plains, where the sun shines every day. Persons who go great distances from home for their health are often exposed to many annoyances, anxieties, and discomforts.

DR. EDWARD O. OTIS, of Boston, read a paper entitled "Measurements of the Chest and Lung Capacity." A comparison of these averages with those of other examiners shows but little difference.

DR. J. R. TAYLOR, of Sag Harbor, N. Y., read a paper entitled "The Filaria Sanguinis Hominis, and Carcinoma of the Heart and Lungs Secondary to Carcinoma of the Liver."

DR. A. L. LOOMIS, of New York, read a paper on "Cardiac Dyspnea." He spoke of the different varieties of dyspnea, and restricted the term cardiac dyspnea to such changes in the heart as interfere with the passage of blood to the lungs. In this condition there are no changes in the lungs, bronchial tubes, or larynx to obstruct the entrance of air into the alveoli. It is because the condition is more commonly the result of obscure changes in the cardiac walls rather than of valvular lesions that its importance is to be emphasized.

Two cases were related in which death had occurred during the dyspneic attacks. In one dilatation of the right heart, with fatty degeneration of its walls, was found, in consequence of which large masses of fibrin formed in the auriculo-ventricular opening, obstructing the passage of blood. In the other case the heart-cavities were found distended with blood, showing that the heart had stopped in diastole. Both coronary arteries were completely obstructed. In one of the arteries the obstruction had evidently existed a long time, but though the caliber of the other was diminished for an inch or more, it had been pervious until a short time before death, as evidenced by a recent thrombus. On microscopic examination the cardiac walls were found to have undergone fibroid changes.

Dr. Loomis considered the different pathologic conditions that would give rise to cardiac dyspnea, and the causes of death.

It seems reasonable to suppose that in all cases the predisposing cause of true cardiac dyspnea is a gradual failure in the contractile power of the heart, and that the exciting cause is an arrest of the cardiac circulation.

A fully developed attack usually comes on with a sense of constriction across the chest, which is immediately followed by a gasping for breath; the surface of the body becomes pale and cold; the countenance extremely anxious, and if the attack is not too severe, the patient is constantly changing his position with the hope of obtaining relief. The mind remains clear; the pulse is feeble, irregular, and intermittent, and frequently there will be a prolonged absence of the radial pulse.

The following were elected officers for the ensuing year: President, Dr. Andrew H. Smith, New York; Vice-Presidents, Dr. E. L. Trudeau, Saranac Lake, N. Y., and Dr. I. H. Platt, Lakewood, N. J.; Secretary and Treasurer, Dr. J. B. Walker, Philadelphia; Council, Dr. E. L. Shurley, Detroit; Dr. A. L. Loomis, New York; Dr. F. I. Knight, Boston; Dr. R. G. Curtin, Philadelphia; and Dr. W. E. Ford, Utica, N. Y.

Cremation at Tokio.—The intelligence and progressiveness of the Japanese are proverbial. That they are in advance in matters sanitary is indicated by the fact that during the year 1892 the number of bodies cremated at Tokio, among a population of about a million, was 16,494.

ASSOCIATION OF AMERICAN PHYSICIANS.

Eighth Annual Meeting, held at Washington, May 30, 31, and June 1, 1893.

FIRST DAY—MAY 30TH.

DR. ALFRED L. LOOMIS delivered the President's Address. He urged the importance of substituting science for mere empiricism in medicine. Scientific skepticism is, perhaps, the most striking characteristic of medicine to-day. The laws of health and disease are now studied in the kindergarten of the laboratory. Extensive speculative theories are rendered almost impossible by the sharp criticism to which every theory is subjected. Every man of science should set himself the task of putting forth only what is true. The final test of a scientific mind is the ability to decide between demonstrated facts and imperfect inferences. The laboratory must be looked to to answer many unsolved problems.

The President, in conclusion, referred feelingly to the deaths of Dr. Geddings and Dr. George Ross.

The thanks of the Association were voted to the Surgeon-General of the Army, for permission to use the Army Medical Museum for the meeting.

Dr. William Pepper resigned as the representative of the Association before the Congress of Physicians and Surgeons.

Dr. George Dock, of Ann Arbor, and Dr. T. F. Rotch, of Boston, were elected members of the Association.

An amendment to the By-laws was passed, allowing the Council to determine the annual dues, instead of having the dues fifteen dollars every year, as at present.

Dr. Minor was, by vote of the Association, transferred from the active to the honorary list of members.

The Treasurer's report showed a balance of \$2076.76.

DR. BEVERLEY ROBINSON, of New York, read a paper on "The Course and Treatment of Certain Uremic Symptoms." The term renal insufficiency is preferred to that of uremia, because the renal origin of the symptoms is not always clear. Illustrative cases were reported. In one there were marked nasal symptoms, with intestinal disturbances, and at times a heavy deposit of urates, but without albumin in the urine. In another case there were laryngeal symptoms, with despondency and irritability, without dyspeptic symptoms. In an other there were nausea and vomiting, with cardiac symptoms.

Dr. Robinson expressed the belief that many nasal, laryngeal, and pharyngeal symptoms are due to impurity of the blood from renal insufficiency. Symptoms similar to those in the cases reported are sometimes connected with organic renal changes.

In treatment, the condition of the kidneys must never be overlooked. In the evident gouty cases, colchicin is much better than nitro-glycerin. So-called increased arterial tension is often due to atheroma, and increased heart-power, through the use of digitalis and caffeine, is needed. But whenever the symptoms indicate renal insufficiency, digitalis must be used with caution. Warburg's tincture was of distinct service in one case—possibly because there had been a malarial infection, or because the remedy may act as an hepatic stimulant. Opium is dangerous in these cases; it does good when the renal insufficiency is secondary to a weakened and

dilated heart. It is not to be used when the pupils are contracted. Nevertheless, hypodermatic injections of morphine have been of great service in uremic convulsions when the symptoms were due to spasm of the renal vessels.

The primary source of uremic symptoms is in the intestinal tract, not in the kidney. Bismuth salicylate and beta-naphthol are of great service, as are inhalations of oxygen and a warm climate.

DR. TYSON coincided with the view that opium is extremely dangerous in renal disease, particularly in chronic interstitial nephritis. In puerperal convulsions, when the kidney is in a condition of parenchymatous inflammation, morphine is of service.

DR. ATKINSON, of Baltimore, spoke of the value of opium in the treatment of both uremic convulsions and the sudden edema of the lungs that occurs in interstitial nephritis.

DR. LOOMIS advises morphine in the acute uremia of parenchymatous nephritis. In chronic uremia the drug may do great harm, except when it so strengthens the heart that it aids the emunctories.

DR. A. H. SMITH presented a paper on "The Reaction of the Urine with Ether." When normal urine is thoroughly shaken with ether, there is usually separated a gelatinous, opalescent substance. In perhaps one-fifth of the cases the ether will not mix with the urine. If a few drops of an acid be added, the reaction will occur in most, but not in all cases. The urine may, in the first place, be acid or not.

The substance thus obtained responds to the tests for protein. It is obtained after all mucus has been removed from the urine. It may, therefore, be considered an albuminoid substance. As it is most abundant in the urine of those having a vigorous appetite and a good digestion, while scanty or absent when the patient is on a restricted diet or has a feeble digestion, the inference is, therefore, that it represents an excess of nutritive proteids taken into the blood and thrown out by the kidneys. Chloroform produces the same reaction as ether.

It is possible that some of the cases in which anuria follows prolonged etherization may be explained by the formation of this gelatinous substance in the tubules of the kidneys, thus mechanically obstructing the excretion of the urine.

The paper of DR. C. W. PURDY, on "Detection, and Significance of Proteids in the Urine," was read by title.

DR. C. S. BOND, of Richmond, Ind., read a paper entitled "Probable Origin and Early Symptoms of Certain Chronic Diseases of the Kidneys." He considered it probable that some of the early cardiac symptoms are due to spasm of the arteries. The tissue-changes are general, but some individuals show the effects more than others. The primary cause of the renal condition must be something that acts upon the body as a whole. Certain diseases, such as gout and rheumatism, and certain conditions, such as septicemia, are recognized as interchangeable causes in certain cases. The presence of uric acid in the blood is at times a potent factor. The cause of the excess of uric acid is to be found in faulty gastro-intestinal digestion; there thus result toxic matters that interfere with normal metabolism and lead to cell-destruction.

DR. WHITTAKER objected to the assumption that the symptoms mentioned necessarily preceded the develop-

ment of nephritis. They are met with in toxemias from any cause, *e. g.*, enteric fever.

DR. W. GILMAN THOMPSON, of New York, read a paper entitled "A Study of Addison's Disease and of the Adrenals," based upon the reports of 750 cases, in most of which there were autopsies.

The most common symptoms were gastric derangement, great muscular weakness, bronzing of the skin, diarrhea, and great feebleness of the heart and circulation.

In one personal case there was no lesion of the adrenals, and this is true of a number of cases observed by others. Moreover, adrenal lesions were noted in 112 cases in the absence of symptoms of Addison's disease.

There is probably disturbance of the abdominal sympathetic system, in particular the celiac axis. There is some experimental evidence in support of this view.

Experiments upon animals have proved negative as to any effect of removal or transplantation of the adrenal. There are, however, distinct degenerative changes in the sympathetic system in Addison's disease.

In only 81 cases has the sympathetic system been examined. In 27 of the last 30 cases lesions were found. Actual disease, however, is not necessary; functional disturbance of the abdominal sympathetic system may be sufficient.

DR. WELCH stated that he has met with six cases of Addison's disease in which there was the characteristic tuberculous lesion of the adrenals. In one there was tuberculous disease of the vertebrae. In a negro pigmentation was discovered in the mouth.

DR. WHITTAKER suggested that perhaps some of the cases supposed to be Addison's disease, but not found to be associated with adrenal lesion, may be cachexias of various kinds.

DR. JAMES TYSON presented a paper entitled "Two Cases of Cystin Calculus." In one case he has never failed, in the past two years, to find cystin in the urinary sediment.

In the second case, the patient's urine for thirty-seven years contained cystin. The man died from the exhaustion of repeated attacks of renal colic. The conditions, therefore, seem to be life-long. The urine should be kept alkaline, as by this means the amount of cystin is much reduced.

DR. G. BAUMGARTEN, of St. Louis, read a paper on "A Simple Continued Fever." He related that in St. Louis and vicinity during the past fifteen years there has been encountered a fever lasting from two and a half to four or five weeks; affecting persons under thirty years of age; marked by high temperature, even hyperpyrexia; sudden onset, rather than a gradual accession; a temperature-curve of greater irregularity than in a typical case of enteric fever; a total absence of local symptoms or signs of localization; the presence of such general symptoms only as may be ascribed to the high temperature, and sometimes terminating by crisis. It is not mild, abortive, or ambulatory enteric fever. The pulse-rate falls before the temperature. Only a minority of the cases present muscular and articular pains. Mental hebetude is absolutely wanting. Delirium is common. The mind is bright. Subsultus tendinum, muttering delirium, and involuntary discharges of urine and feces are absolutely wanting. Digestive symptoms are not well marked. Diarrhea is rare, and the stools are never

like those of enteric fever. Post-mortem evidence is wanting, for there were no fatal cases. The spleen is not enlarged. Sometimes at the height of the fever there was a hacking cough. There are no rose spots. Emaciation is usually marked, but not so decided as in enteric fever. True relapses on the fourth or seventh day of apyrexia are rather more common than in enteric fever. The plasmodium of malaria could not be found in the blood.

For the want of a better name the condition may be called *febris continua simplex*.

DR. J. T. WHITTAKER, of Cincinnati, read a paper on "Creasote in the Treatment of Tuberculosis." He pointed out that the virtue of creasote depends upon its purity. The impure contains carbolic acid. Creasote has no influence on the fever; not enough can be given to have any direct effect upon the tubercle-bacillus.

Tuberculosis in man is not a simple process, differing in this respect from tuberculosis of the laboratory. The sputum contains also various cocci, which give rise to secondary complications, leading to septicemia and a fatal termination. Creasote favorably influences these complications by promoting nutrition, but is in no sense a specific for tuberculosis.

Creasote may be given internally, subcutaneously, and by inhalation. It should be given in the largest dose that will be tolerated. The use of tuberculin may be conjoined with that of creasote.

DR. F. FORCHHEIMER read a paper on "The Intestinal Origin of Chlorosis." He stated that chlorosis is due to an oligochromemia. The diminution of hemoglobin may result from increased destruction or lessened formation. There is no appreciable destruction of hemoglobin, as determined by the absence of urobilin from the urine. Chlorosis is the result of faulty hemopoiesis. Hemoglobin is principally formed in the intestine, as has been demonstrated by direct investigation upon lower animals, and by indirect observation upon the human being. The red corpuscles in the veins contain more hemoglobin than those in the arteries. Further, the formation of hemoglobin can be increased by the introduction into the intestine of agents not containing iron, but preventing putrefaction.

A large amount of hemoglobin (about 3 per cent.) is added to the blood after the principal meal.

Dr. Forchheimer has investigated a toxic body, a proteose, that was obtained from the urine of cases of chlorosis. In 11 cases treated with salol and hydronaphthol, and without iron a gain of from 5 to 12 per cent. of hemoglobin was noted. Hydronaphthol rather proved the better remedy. The conclusion is reached that chlorosis is due to some interference with the formation of hemoglobin as a result of a destructive action in the intestine upon the precursor of hemoglobin.

Dr. Forchheimer holds that there is always an anemia as well as an oligochromemia. He is experimenting with the substance isolated from the urine.

DR. H. C. WOOD read a paper on "Experimental Observations Concerning the Nature of Chorea."

Having observed that quinine stimulates inhibition, and thinking that perhaps the movements of chorea were dependent upon diminished inhibitory power, he injected small doses of quinine into a choreic dog, and the movements were arrested. Under atropine the

choreic movements were increased, and even exaggerated. In chorea the reflexes may appear to be wanting, but they can be elicited by reinforcement. It does not follow, however, because quinine stimulates inhibition that it will cure chorea.

Clinical experiments upon dogs with chorea support the views announced. In several cases in human beings, distinct improvement, and in some apparent cure, followed the use of quinine (gr. xij-xxiv a day). Of nine cases treated by Dr. Potts, quinine failed in only two. The average duration of treatment was eleven days. There was no appearance of cinchonism in any of the cases.

DR. WHITTAKER pointed out that the experiments were defective in that there was no record of blood-examination. Many cases are of toxic origin; some are malarial.

DR. WELCH said that in chorea in the dog there is a peculiar protozoic organism present in the intestine, but no malarial germ in the blood.

DR. OSLER said that chorea in the dog and chorea in the child are not identical, either in the character of the movements or in the pathologic anatomy. Chorea in the dog is not followed by endocarditis. Quinine is probably not a better medicament than arsenic in the treatment.

DR. WOOD maintained that chorea is a condition and not a disease, which may be produced by many causes. There is reason to think that possibly the underlying factor is a weakening of inhibition. The chorea of the dog and the chorea of the child may or may not be the same, but they have at least many things in common.

(To be continued.)

AMERICAN SURGICAL ASSOCIATION.

Fourteenth Annual Meeting, Buffalo, N. Y., May 30, 31, and June 1, 1893.

FIRST DAY—MAY 30TH.

DR. M. D. MANN, of Buffalo, delivered an Address of Welcome.

DR. N. SENN, of Chicago, delivered the President's Address, taking for his subject "A New Method of Direct Fixation of Fragments in Compound and Ununited Fractures." He formulated the following conclusions:

1. Direct fixation of the fragments is indicated in all compound fractures in which perfect retention cannot be secured by simpler measures, and in the treatment of ununited fractures requiring operative interference.
2. This method is also justifiable in the treatment of certain forms of subcutaneous fracture in which reduction and retention cannot be accomplished without it.
3. Free exposure of the fragments in compound fractures secures the most favorable condition for thorough disinfection.
4. Perfect reduction and direct fixation of the fragments are the most reliable prophylactic measures against delayed union, non-union, and deformity.
5. A compound fracture should be regarded in the same light as an injury of soft tissues, and should be treated upon the same principles, viz., accurate coaptation of the different anatomic structures and perfect

retention by direct means of fixation, aided by an efficient external support.

6. Bone-suture, metallic, bone, and ivory nails do not furnish the necessary degree of support and immobilization in the direct treatment of fracture characterized by a strong tendency to displacement.

7. The solid intra-osseous splint of ivory or bone, as advised by Heine, Langenbeck, and Bircher, is objectionable, because it interferes with the ideal production of the intermediate callus and its spontaneous removal is beyond the absorptive capacity of the tissue.

8. The hollow, perforated ivory or bone cylinder, devised by the author, answers the same mechanical purpose, without the objections that have been charged against the solid cylinder.

9. The safest and most efficient means of direct fixation of oblique fractures is by a bone ferrule that must be applied in such a manner as to surround both fragments.

10. Such a circular, absorbable, direct splint prevents to perfection lateral and longitudinal displacement.

11. Rotation of the limb below and angularity at the seat of fracture must be prevented by a carefully applied circular plaster-of-Paris splint.

12. For fractures not requiring drainage the entire wound should be closed by buried and superficial sutures, as the bone ferrule is removed by absorption.

13. In suppurating wounds the bone ferrule should not be removed until direct fixation has become superfluous by the formation of a sufficiently firm union between the fragments.

14. The external splint should be applied in such a manner that it does not require a change throughout the entire treatment, permitting, at the same time, access to the wound, should this become necessary.

15. Direct fixation of a fracture, combined with perfect immobilization, brings the different anatomic structures of the broken bone permanently into their former normal relations, preparing the way for the early initiation and speedy consummation of an ideal process of repair and the realization of a perfect functional result.

16. Should further experience demonstrate that bone is not sufficiently absorbable, the same kind of ferrules can be made of partially decalcified bone or chromicized catgut.

(To be continued.)

CORRESPONDENCE.

FRACTURE OF THE FEMUR DURING DELIVERY; REPORT OF A CASE.

To the Editor of THE MEDICAL NEWS,

SIR: In THE MEDICAL NEWS of March 25, 1893, Dr. Hubbard reports a case of femur fractured during delivery. Another case is also reported in your issue of May 13, 1893, by Dr. Gruwell.

This is, indeed, an accident of rare occurrence, and when it does occur the physician is likely to be censured by the parents and friends. In the last eight years I have witnessed and attended over five hundred cases of labor, both in this country and in Germany, and have only seen the accident once, the case occurring in my private practice. In February, 1891, I was called to see

Mrs. B., a primipara, who had been in labor four and a half hours. The membranes had been ruptured an hour before my arrival; the left leg of the fetus was protruding from the vagina, with the nates presenting at the vulva; the cord was pulsating. I grasped the protruding foot and made slight traction; a very severe pain followed, with apparently no advancement of the child. I then introduced my forefinger and found the right leg applied to the back of the left thigh, and directly across the pelvis of the mother. Hesitating a moment to consider the best method of relief, another hard pain came on; I hastily withdrew my finger and the child was expelled, leaving the perineum intact. A sharp click was distinctly heard by the three persons present. The child was somewhat asphyxiated, and as I caught hold of its feet to hold it up I felt the sensation of a broken bone, and the little one (a girl) began to cry lustily. On examination, I found the right femur broken in the middle third; crepitation was distinctly recognized, and, while the child moved the left leg, the right one was kept absolutely quiet. I had the infant thoroughly washed, set the broken bone, smoothly wrapped the leg in a thin layer of absorbent cotton, cut a piece of paste-board in the form of a circular splint, and after wetting it thoroughly in very hot water, starched it, and applied it over the cotton, letting it extend from the hip to midway between the knee and the ankle. It was placed smoothly over the cotton, encircling the whole leg, and held in place by six pieces of adhesive plaster; over this a bandage was neatly applied, then a padded lath which extended from axilla to ankle, and bound in place by an inner and an outer bandage. The outer one was changed about every second day, or whenever it became soiled. The little one thrived, and in four weeks I released it and found a perfect limb, with quite a large amount of callus at the point of fracture; in six months this had disappeared. The infant walked as early as any child, and there was no shortening.

Very respectfully yours,

CHARLES F. DAVIDSON, M.D.

QUEENSTOWN, Md.

CONSERVATIVE SURGERY IN APPENDICITIS.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of May 13th there appeared an article on "Appendicitis," by Dr. Reuben Peterson, who records a unique case appearing after confinement.

His description may satisfy physicians who yet call pneumonia inflammation of the lungs, or lung-fever; meningitis, brain-fever; and treat such diseases as "inflammation of the bowels, idiopathic peritonitis, typhlitis, perityphlitis," etc. But let Dr. Peterson himself be taken, as I was on the 6th of May, with a severe attack of acute appendicitis, call in a physician well up on the subject, who advised sending for a surgeon who is our ideal in this part of New York; and then, with a nice little home, wife and daughter; with a fair practice—everything to live for—what would he think of them sitting by his bedside and telling him that 50 per cent. of the cases get well with a good "let-alone treatment?" Would he be satisfied? I trust not.

I know too well the results of surgical work in this direction. One surgeon, Dr. R. T. Morris, of New York,

who comes here, has never lost a case when he has been called in time; and he believes that the mortality should not be over 1 per cent. if cases are taken in hand before septemia or suppuration has set in. His usual incision in uncomplicated cases is one and one-half inches.

A single man or woman may enjoy the luxury of delay, but a man with a family is morally bound to have his appendix vermiformis removed as soon as a diagnosis of appendicitis is made.

Cases that are not operated upon often become chronic invalids—in consequence of the presence of adhesions or of recurrent attacks.

To-day I am practically a well man, devoid of a vermiform (Wilder)—thanks to advanced surgery.

Every man, woman, and physician can look back and recall some friend who has died of this frightful disease.

Please allow this space, and oblige a thorough believer in early operations.

JOHN S. KIRKENDALL, M.D.

ITHACA, N. Y.

ANGINA PECTORIS.

To the Editor of THE MEDICAL NEWS,

SIR: At the recent meeting of the Climatological Association I took occasion to make some remarks upon angina pectoris, the subject having been introduced by Dr. Curtin, the President of the Association. I endeavored to emphasize the distinction between genuine angina pectoris (Heberden's disease) and pseudo-angina, or "angina pectoris vasomotoria," for, as it seemed to me, the line of demarcation between these widely different affections had not been sharply drawn. I spoke of the rarity of genuine angina, mentioned in proof thereof the small number of cases that I had seen during a twenty years' service in large Philadelphia hospitals, and referred, from memory, to a similar statement in Eichhorst's *Specielle Pathologie*. On consulting this work I find that the statement to which, at the meeting of the Association, I could only refer in general terms is that Gilbert Blane, during ten years at St. Thomas's Hospital, treated 3835 patients, not one of whom suffered from angina.¹

In reply to my remarks, it was objected that angina pectoris is much more common in private than in hospital practice, a statement which confirms my opinion that the distinction between genuine and spurious angina was not carefully maintained.

Genuine angina pectoris is a symptom of organic disease of the heart and neighboring vessels, its most common association being with atheroma of the aorta and coronary arteries, and until it is proved that this form of degeneration is more common in the well-to-do classes—that is, in the well-nourished and temperate—than in ill-nourished inebriates, the statement that angina is more common in private than in hospital practice rests upon nothing more than a mere *ipse dixit*.

It would be hard to convince a physician connected with the Philadelphia Hospital, in which nearly every patient past middle age presents signs of sclerotic or

¹ "Gilbert Blane, beispielsweise, welcher innerhalb von zehn Jahren im Thomasspital 3835 Personen behandelte, begegnete ihr nicht ein einziges mal."

atheromatous arteries, that the bloodvessels of comparatively temperate men and women are in a still worse condition.

Yours truly,

FREDERICK P. HENRY.

1635 LOCUST STREET, PHILADELPHIA.

DR. FREIRE'S YELLOW-FEVER INOCULATIONS.

To the Editor of THE MEDICAL NEWS,

SIR: I regret that I am obliged to occupy your space and my time in correcting a misunderstanding by Dr. Gaston of the extract from my published report quoted in my letter in your issue of April 8th.

The quotation is as follows:

"It is a significant fact that, of the 3051 vaccinated prior to August, 1885, Dr. Freire has only 1 fatal case to report, while out of 460 vaccinated in January and February, 1886, he reports 5 deaths, a mortality of more than 1 per cent., which he gives as the general mortality among those [the non-] vaccinated. That is to say, the mortality among those vaccinated during these two epidemic months was more than 1 per cent. On referring to the mortality of the city for the same two months, he remarks: 'I find the total number of deaths to have been 369, which, in a total susceptible population of 160,000 (Dr. Freire's estimate), would give a mortality of 1 in 436.'"

Dr. Gaston comments on this as follows:

"This is the climax of Dr. Sternberg's array of figures against the statistics of Freire: that more of his inoculated cases died in a given period than the proportion of deaths from all causes amongst the population of the entire city, including, of course, in the general result, those identical cases laid at the door of Domingos Freire."

I am not so stupid as to compare the "deaths from all causes amongst the population of the entire city," with the deaths among those vaccinated by Freire. My report relates to yellow fever mortality, and the 5 deaths among 460 vaccinated in January and February, 1886, were deaths from yellow fever. The 369 deaths which occurred in a total susceptible population of 160,000 were deaths from yellow fever; and 160,000 is not the "population of the entire city," which exceeds 400,000, but is the estimate made by Freire himself of the susceptible population of Rio.

Very truly yours,

GEORGE M. STERNBERG.

NEW YORK, May 8, 1893.

NEWS ITEMS.

Dr. S. Baruch has withdrawn from the *Dietetic Gazette* to assume editorial charge of the *Journal of Balneology*.

Morphinomania in Paris.—The startling estimate is given out that there are from 40,000 to 100,000 morphinomaniacs in Paris.

Colonel George M. Sternberg, M.D., U.S.A., has been appointed Surgeon-General of the United States Army, vice Sunderland, retired.

The Eighth International Congress of Hygiene and Demography will be held at Buda-Pesth in 1894. The work

will be divided among thirteen sections, as follows: 1. Bacteriology. 2. Preventive Medicine. 3. Hygiene of Occupations. 4. Hygiene of Childhood; School Hygiene. 5. Hygiene of Food-supply. 6. Hygiene of Building. 7. Hygiene of Cities. 8. Railway and Ship Hygiene. 9. Military Hygiene. 10. Hygiene of Mineral Springs and Baths. 11. State Hygiene. 12. Veterinary Hygiene. 13. Hygiene in Pharmacy.

The International Medical Congress.—It is officially announced that the rumors are entirely unfounded that the International Medical Congress to be held at Rome in September is to be postponed on account of the engagement with cholera matters of distinguished participants. The Fifteenth Section of the Congress will be devoted to a consideration of cholera and quarantine. Prof. Koch and Prof. Cunningham are expected to take part in the discussion. In addition to the North German Lloyd Steamship Company, the Hamburg-American Packet Company, and the Compagnie Générale Transatlantique, the Netherlands Steam Navigation Company offers reduced rates of transportation to visitors to the Congress. The Hamburg-American Packet Company announces that the concession also applies to the families of members.

BOOKS AND PAMPHLETS RECEIVED.

A System of Genito-urinary Syphilology and Dermatology. By Various Authors. Edited by Prince A. Morrow, A.M., M.D. In three volumes. Vol. I, Genito-urinary Diseases. New York: D. Appleton & Co., 1893.

Psychopathia Sexualis, with Especial Reference to Contrary Sexual Instinct: A Medico-Legal Study. By Dr. R. von Krafft-Ebing. Authorized translation of the seventh enlarged and revised German edition, by Charles Gilbert Chaddock, M.D. Philadelphia and London: The F. A. Davis Co., 1893.

History of the Life of D. Hayes Agnew, M.D., LL.D. By J. Howe Adams, M.D. Philadelphia and London: The F. A. Davis Co., 1892.

Ripening of Immature Cataracts by Direct Trituration. By Boerne Bettman, M.D. Reprinted from Annals of Ophthalmology and Otolaryngology, 1893.

Students' Expenses. A Collection of Letters from Undergraduates, Graduates, and Professional School Students, Describing in Detail their Necessary Expenses at Harvard University; with an Introduction by Frank Bolles, Secretary of Harvard University. Cambridge: Published by Harvard University, 1893.

The Third Year's Work at the Clinic for Diseases of the Rectum in the New York Post-Graduate Hospital. By Charles B. Kelsey, M.D. Reprinted from the New York Medical Journal, 1893.

Report of a Case of Syringomyelia, with Exhibition of Sections of the Spinal Cord. By James Hendrie Lloyd, A.M., M.D. Reprinted from the University Medical Magazine, 1893.

Diseases of the Skin. By P. H. Pye-Smith, M.D., F.R.S. Philadelphia: Lea Brothers & Co., 1893.

Elementary Physiology for Students. By Alfred T. Schofield, M.D. Philadelphia: Lea Brothers & Co., 1892.

Investigations into the Nature, Causation, and Prevention of Texas or Southern Cattle Fever. Made under the Direction of Dr. D. E. Salmon, Chief of the Bureau of Animal Industry. By Theobald Smith, Ph.B., M.D., and F. L. Kilborne, B.Agr., B.V.S. Published by authority of the Secretary of Agriculture. Washington: Government Printing Office, 1893.

Tumor of the Hard Palate; Acute Appendicitis; Perinephritic Abscess. By W. W. Keen, M.D., LL.D. Reprinted from International Clinics, vol. iv, 2d series.

Original Investigations in Cattle Diseases in Nebraska. Southern Cattle Plague. Third edition. By Frank S. Billings. Lincoln, Neb.: State Journal Co., Printers, 1893.